TAMPEREEN TEKNILLINEN YLIOPISTO
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MANUFACTURING INVESTMENTS IN FINLAND 2005-2015: AN ANALYSIS OF PUBLISHED NEWS IN THE FINNISH MEDIA ARCHIVES

Master of Science thesis

Examiner: prof. Jussi Heikkilä
Examiner and topic approved by the Faculty Council of the Faculty of Business and Built Environment on 4th November 2015

ABSTRACT

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Keywords: manufacturing investments, location decisions, reshoring, business ecosystems

This study is done as a part of the Reshoring of Manufacturing (ROaMING) project. The project focuses on the trends of moving manufacturing to overseas and returning it back, and the role of disruptive technologies and manufacturing investments in Nordic countries as potential sources of industrial renewal. This study focuses on manufacturing investments made in Finland during the period 2005-2015. In more detail, the goals are to figure out the extent and trends of investments, the drivers and potential benefits to be gained through investments and the effects of investments to industrial competitiveness.

This study is conducted by analyzing the investment news published in the media, and materials have been collected using Talentum news archive. The selected sampling encompasses the 100 largest manufacturing companies in Finland. The data is analyzed both numerically in order to find out the extent and the trends of investments and the types of investments (categorized for new, development and replacement investments), and through case studies of four companies from different industrial branches, with different approaches to manufacturing investments.

Several important implications were found out by the results of the study. Firstly, the impact of economic crisis to the extent of investments is obvious. After the year 2008 the number of investments has decreased radically. However, the trend is again slightly upwards. The most common investment type was development investment. Investments for process development were widely made in order to minimize the production costs and enhance performance. The results of the case studies supported this finding. Investments for product and process development in order to strengthen the competitiveness of manufacturing companies seemed to be the common characteristics in the case companies. Expansion investments were made as a reaction for increased demand, and competitive advantage was achieved through product differentiation and new product innovations.

TIIVISTELMÄ

KIRSI LINDFORS: Valmistavan teollisuuden investoinnit Suomessa 2005-2015: analyysi suomalaisen uutisaineiston pohjalta
Tampereen teknillinen ylipisto
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Tässä diplomityössä tutkittiin valmistavan teollisuuden investointeja Suomessa. Työn tavoitteena oli selvittää, kuinka paljon Suomessa on investoitu valmistavaan teollisuuteen viimeisen kymmenen vuoden aikana ja millaisia trendejä investointitaajuudessa on ollut, sekä millaisia ajureita investointipäätösten taustalta löytyy. Erityisenä kiinnostuksenaiheena oli se, kuinka nämä investoinnit vaikuttavat Suomen valmistavan teollisuuden kilpailukyvyn kehittymiseen ja teollisuuden uudistumiseen.

Tutkimusstrategia oli arkistotutkimus, ja työ toteutettiin analysoimalla Talentum-uutisarkistotietokannasta kerättyjä uutisia yritysten investointipäätöksistä. Mukaan tarkasteluun valittiin liikevaihdolla mitattuna sata suurinta suomalaista valmistavaan teollisuuteen keskittyvää yritystä. Numeerinen analyysi sekä investointityyppien mukainen luokittelu uus-, korvaus- ja kehitysinvestointeihin toteutettiin koko aineiston pohjalta. Lisäksi joukosta valittiin neljä yritystä eri teollisuudenaloilta, joista tehtiin case-kuvaus ja syvällisempi analyysi investoinneista, niiden tavoitteista ja vaikutuksista kilpailukykyyn.

Työn keskeisimpiä tuloksia olivat havaitut investointitrendit sekä syyt ja tavoitteet investointipäätösten taustalla. Vuonna 2008 alkaneella maailmanlaajuisella talouskriisillä oli selkeä vaikutus yritysten investointiaktiivisuuteen: vuoden 2008 jälkeen investointien määrä laski dramaattisesti. Viime vuosina määrä on kuitenkin lähtenyt jälleen kevyeen nousuun. Suurin osa investoinneista oli kehitysinvestointeja ja niitä tehtiin erityisesti tuotantoprosessien kehittämiseen suorituskyvyn lisäämiseksi ja tuotantokustannuksien alentamiseksi. Case-yrityksissä investointeja tehtiin myös tuotekehitykseen ja automaatioon, ja tuotantokapasiteettia kasvatettiin vastaamaan kasvaneeseen kysyntään. Havaittiin myös, että uusilla teknologioilla ja tuoteinnovaatioilla on oma merkittävä roolinsa kilpailukyvyn säilyttäjänä.

PREFACE

This thesis project has been surprisingly easy-going. I found the topic very interesting and that is probably why I never felt exhausted during the process, even if it was a bit challenging at times. I was lucky to have this chance.

I would like to thank Professor Jussi Heikkilä for his guidance, support and good advice during the project. Thank for my brother Pete for proofreading and comments. I am also very grateful to my dear family and friends for being there for me. Especially I would like to express my gratitude for my mother, for the endless support and caring.

Last but not least, I will never forget the encouragement and presence of my beloved husband Jukka – thank you for staying by my side.

Tampere, 20.11.2015

Kirsi Lindfors

CONTENTS

DEFINITIONS

Offshoring	Relocation of activities from a company's home country to abroad, either under the ownership of the same company (captive offshoring) or combined with the transfer of the ownership of the activities to another company (offshore outsourcing).
Reshoring	Bringing activities back to home country after an earlier act of offshoring. Reshoring can be done under the ownership of the same company or combined with the transfer of the ownership from another company
Outsourcing	Moving company's activities to be owned by another company, either in the home country or abroad.
Insourcing	Moving activities from another company to an in-house activity of the insourcing company.

1. INTRODUCTION

1.1 Background

Manufacturing industries have played an important role in the Nordic countries for employment and income for the national economies. After the global financial crisis of 2008 the manufacturing sector and industrial competitiveness in global markets has been in decline in Europe. The loss of competitiveness has resulted in decisions to offshore production to low-cost countries. However, quite a new trend in Nordic countries with signs of increase is to reshore production that was previously offshored. (Heikkilä et al. 2014)

This thesis is a part of the ROaMING project and investigates manufacturing investments made in Finland during the period of 2005-2015. The main goal of this study is to make an analysis of the manufacturing investment decisions in Finland, based on the published news from the Finnish media archives, using the Talentum news database. The more detailed analysis will be made of different types of investments, the drivers of the investments, and the intended benefits for the manufacturing companies making the investments.

The scope of the project and this study is illustrated in Figure 1.

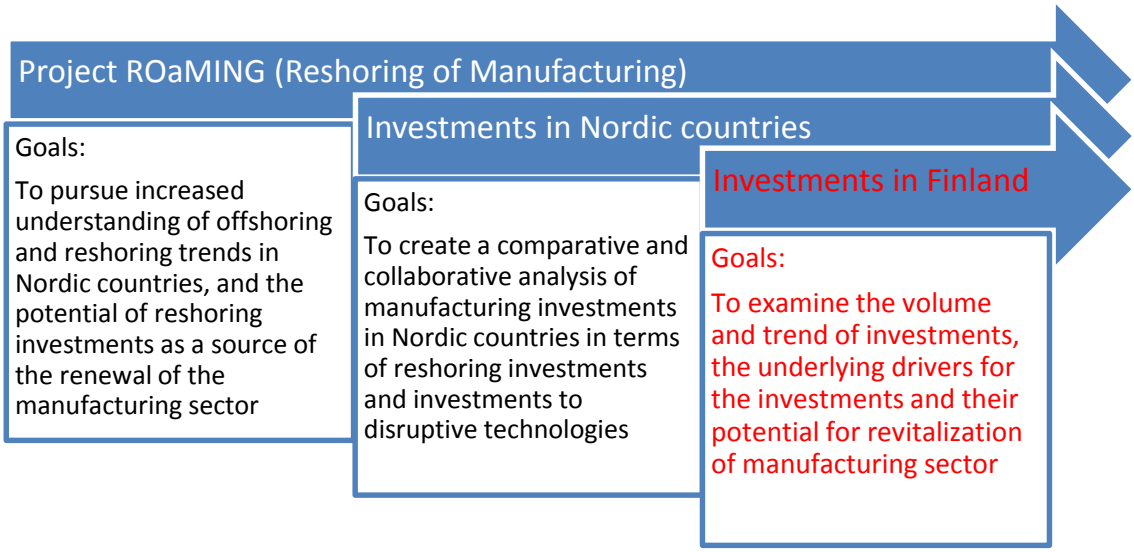


***Figure 1**. The focus and background of this study.*

The Reshoring of Manufacturing (ROaMING) project is a cooperative research project that pursues increased understanding of manufacturing offshoring and reshoring trends

in Finland, Sweden and Denmark. Investments for the domestic production and reshoring of previously offshored manufacturing activities are considered to have a strong potential for increased competitiveness and renewal of the manufacturing sector in these countries. (Heikkilä et al. 2014)

1.2 Research questions

The following three research questions are defined to guide this study:

What have been the volume and the trend of investments in manufacturing in Finland according to the published news during the last ten years?

What have been the intended drivers and objectives of these investments, according to the published information?

What can we conclude from the trend of investments, and their drivers and objectives, as a source of renewal for Finnish manufacturing industry in general?

1.3 Goals and limitations

The main goals of this study are to identify and categorize manufacturing investments in Finland and to make an analysis of the types of investments that are made, as well as to find out the motives, and potential benefits for the companies following the investments made. As one of the main objectives of the ROaMING project is the general reshoring phenomenon, this study is delimited geographically to manufacturing investments made in Finland. The timeframe coverage of this study is from 2005 to 2015.

Limitations concern mainly the data-set used in this research: even if a large data-set will be collected using Talentum database, there may not be all the existing information about Finnish investments.

1.4 Research strategy and methods

In this study, literature review will be done first to help to construct the theoretical framework. The empirical part of the study is based on a large data set collected using the Talentum news database. The materials consist of news published in business media concerning manufacturing investments made in Finland during the period of 2005-2015.

The data, i.e. news and releases concerning manufacturing investments in Finland during the last ten years, will be analyzed and categorized. After doing that, more specific focus is set on four selected companies' investment cases. Research strategy in

this study is archive research. The choices concerning the methodology used in this study is illustrated in Figure 2.

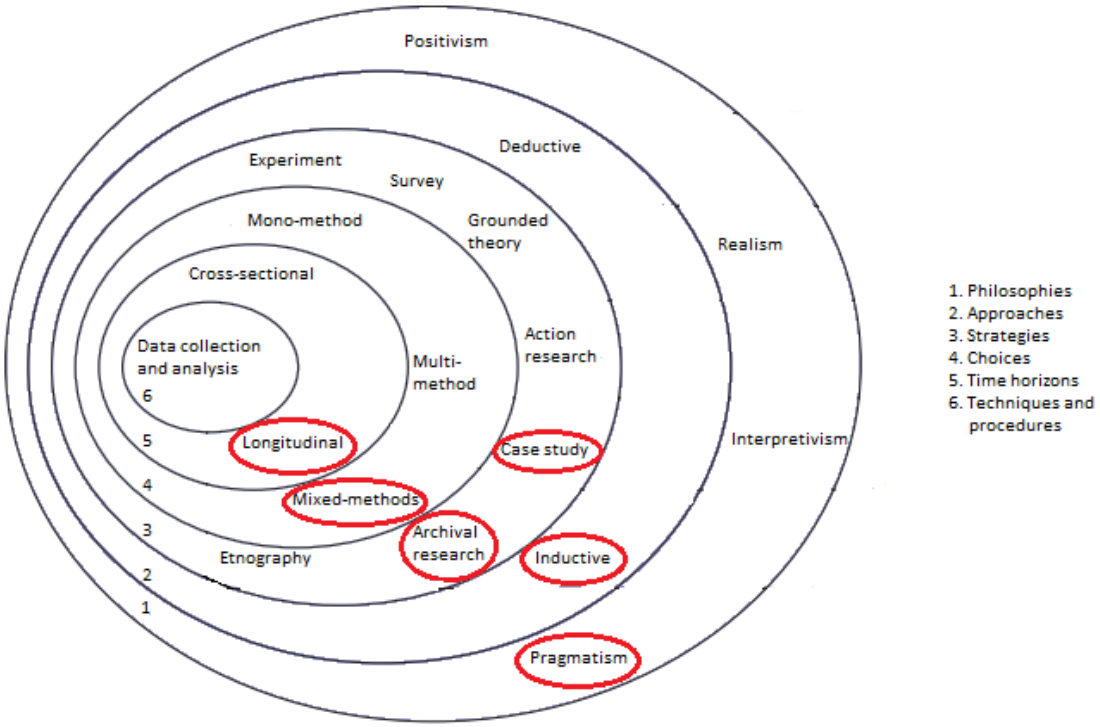


Figure 2. *The research structure.*

The approach is mainly inductive, which refers to generating theory rather than testing the existing theory. Although archival research is the main strategy, the case research is executed, being still founded on the data collected from archive. The timespan is longitudinal as the frame is for ten years. Data analysis is done by both quantitative and qualitative mode; therefore, the research choice is mixed-methods.

1.5 Structure

The structure of the thesis will be divided into theoretical and empirical part. Chapter 1 is Introduction, consisting of the background and the needs for the project. The research questions and research design are defined in this chapter. Chapter 2 offers theoretical framework of the study and focuses on production location decisions, drivers and motives and the procedure, offshoring and reshoring phenomena in more detail, and the effects of reshoring to business ecosystems and industrial renewal. In Chapter 3 the methods and data collection process are described. Chapter 4 presents results and analysis of the empirical research, and the conclusions are summarized. In chapter 5 the study is evaluated for its validity and reliability, and the limitations are discussed.

1.6 Literature review

The main questions addressed when doing the literature review were as follows:

How manufacturing companies make their production location decisions?

What are the reasons for companies to choose a particular location for their manufacturing plant, either in their home country or abroad?

What is the role of manufacturing investments in the renewal and change of manufacturing industries?

The theoretical background has been created based on these questions, and the former research has been undergone in order to create understanding of the topic.

2. MANUFACTURING INVESTMENTS AND PRODUCTION LOCATION CHOICES

Several theories and frameworks have been created in the past decades in order to explain the phenomenon of manufacturing companies producing internationally. Transaction cost theory set out by Coase (1937), international product cycle theory of Vernon (1966), internalization theory of Buckley & Casson (1976) and the eclectic paradigm of Dunning (1980, 1988), to mention some of these, are cited widely in the literature addressing production location choices.

A large number of empirical studies have examined the motives of production internationalization. Cost reasons, opening new markets, access to foreign distribution channels, access to materials and goods, securing knowledge and following the investors are among the most significant drivers and motives. (Kinkel & Maloca 2009) However, the nature of moving production is quite complicated and moving production away from home country is not a straightforward process. But neither is returning production back to the home country of a manufacturing company. In this literature review, the focus is set on the phenomena related to companies' location choices, moving production into offshore locations and then moving it back to company's home area. In this paper, these phenomena are named *offshoring* and *reshoring*. The next subchapter (2.1) addresses the variety of terms and concepts used in this kind of activities. In this research field the *outsourcing* phenomenon, which refers to changes in the ownership of factory or production activities, takes also place and is therefore discussed in the Chapter 2.1.

In this chapter, theoretical background for the study is presented. Chapter 2.2 addresses *production location choices* and issues affecting the decisions. In addition, the *decision making process* is described step by step. In chapter 2.3 the *offshoring* is discussed. Chapter 2.4 considers the *reshoring* phenomenon and drivers and challenges related to reshoring. Chapter 2.5 addresses the *effects of reshoring on business ecosystems*.

2.1 Terminology and key concepts

In the academic literature over years, various terminologies are used to describe the phenomenon around relocating companies' manufacturing activities from and back to their home countries. In this study, the main concepts related to production location choices are presented in Table 1.

Table 1. *Conceptual clearness.*

Concept	Definition	Collateral terms
Offshoring	Moving production to foreign country, either to owned subsidiary or external company	-
Reshoring	Moving production back to its original country from the country it was moved to before	Backshoring, back-shoring, re-shoring, back-reshoring
Nearshoring	Localizing production near to a company's home country, either from offshore location or its home country	Offshoring, relocation, internationalization (in general)
Offshore outsourcing	Moving production to a foreign country and changing ownership to an external actor	Global sourcing

Many connotations are related to the phenomenon of moving manufacturing. Fratocchi et al. (2014) discusses the variety of concepts and meanings suggested by different sources. Table 1 concludes often referred connotations. Some authors (e.g. Lewin & Peeters 2006; Arlbjørn & Mikkelsen 2014) use the term "offshoring" denoting moving manufacturing to the foreign country but still keeping ownership and control of activities in-house, i.e. having an owned subsidiary. On the other hand, according to Olsen (2006) the term "offshore" does not in itself contain the question of ownership but only to the location, and therefore offshored activities do not necessarily need to be under ownership of the company. In this study the terms offshoring and outsourcing are distinguished and in the case that ownership changes when production is moved geographically, the term "offshore outsourcing" is the most suitable way to describe that kind of action.

When production is moved in the opposite direction of offshoring, i.e. back to its original location, the movement is termed as reshoring or backshoring. There are also variations in terminology and definitions of this kind of activity. The concept of backshoring is still not unambiguous in the existing literature, as e.g. Arlbjørn & Mikkelsen (2014) consider it not necessarily to be relocated to the country from where

it was originally offshored but relocated to another country from the previous offshore location, to a facility owned by a company. Kinkel (2012) does not support this consideration but distinguish between relocation to original country and another offshore location, using the term 'backshoring' only in the first case. Fratocchi et al (2014) use the term 'back-reshoring', which is a combination of the most used terms, to describe particularly the movement to the original country.

According to Olsen (2006), the term "nearshoring" is adopted when concerning relocation of activities to Canada and Mexico, for example. In that case, production can be offshored into the country near to a company's home country. In some context nearshoring can also happen when production is moved into the country near to the company's home country from previously offshored location. In this study the distance is not generally taken into account, but the drivers and risks discussed in this study occur predominantly in countries over distance, such as in Asia.

Manufacturing outsourcing, in other words the make-or-buy decision, has not been researched a lot during recent years. The topic has gained much attention in the earlier decades partly because of the fear that industrialized countries would jeopardize their long-term competitiveness by outsourcing (Ellram et al. 2008). Manufacturing outsourcing means transferring ownership and control of manufacturing activities to a third party (Arlbjørn & Mikkelsen 2014). The opposite of outsourcing is *insourcing*; transferring ownership of activities that were earlier under ownership of another producer to the firm itself.

Therefore, outsourcing does not necessarily answer the question of where it happens, although the concepts are partly linked to questions of manufacturing location. For distinguishing more strictly between the operations in home and foreign locations in respect of ownership, concepts such 'offshore outsourcing' and 'captive offshoring' are used in the existing literature (e.g. Ellram et al. 2008; Jensen et al. 2009; Gylling et al. 2015). Table 2 clarifies the different aspects.

Table 2. *Concepts (Jensen et al. 2009, further UNCTAD 2004)*

	Internal	**External**
Domestic	Domestic in-house production	Domestic outsourcing
International	Captive offshoring	Offshore outsourcing

Considering the nature of outsourcing/insourcing activities in global networks, some authors (e.g. Kinkel 2014; Gylling et al. 2015) focus the research on ownership in locational point of view, the drivers and barriers being kind of related to particular

location. The concepts can be simplified so that when manufacturing is outsourced, the ownership and control are transferred to an external actor, action taking place independently of locational aspects; insourcing is respectively taking activities under own control in either home or foreign location. The decisions can still be also a matter of location, especially when the drivers and intended benefits relate to particular location characteristics.

Advantages of outsourcing activities are, e.g., improved performance in terms of cost reductions (McIvor 2009), increased flexibility and economies of scope (Ellram et al. 2008), and focusing on the company's core competence (Olsen 2006). Firm's size seems to affect the suggested advantages caused by outsourcing: according to Arlbjørn's (2015) survey, wage and productivity advantages are identified as the main driver for companies despite of the size of the company, but the secondary drivers differ. For small companies those drivers are increased flexibility, escape from non-competitive frame conditions and avoiding investments in new equipment. Among medium-sized companies, all the factors that were meaningful for small companies, applied also to the medium-sized companies. In addition, factors mentioned were production close to market and focus on core competences, all with equal importance. For large companies the factors are mainly the same but emphasis is given to increased flexibility, focus on core areas and lack of competitive frame conditions. (Arlbjørn 2015)

Outsourcing decision impacts not only the firm's cost structure but also its long-term competitive situation and risk environment (Ellram et al. 2008). Therefore, the decision making process should be carefully considered in light of strategic questions and looking at the 'big picture'. McIvor (2009) discusses a company's core competences and transaction cost analysis as the strategic variables in outsourcing decision. Advantages of lower wages in developing countries can be lost due to economic development of the target country (Arlbjørn 2015). Problems of outsourcing are often related, among others, to poorer product quality and increased costs (Arlbjørn & Lüthje 2012). Hence, outsourcing decision should not be based on merely cost savings but it needs to be carefully considered in light of several different variables.

2.2 Production location choices

The movement of production activities of manufacturing companies to foreign locations has been largely researched both theoretically and empirically in the past decades (e.g. Dunning 1980, 1988, 1998; Kinkel 2012). The eclectic paradigm of international production, also known as OLI model (ownership, location and internalization advantages), created and later revised by Dunning (1980, 1988, 1998), includes elements of some former theories related to international production and works as a general framework for production internationalization.

2.2.1 The OLI model

The OLI model presents four main types of foreign direct investments (FDI) labelled by location advantages for multi-national enterprises:

- Natural resource seeking FDI
- Market-seeking FDI
- Efficiency-seeking FDI
- Strategic-asset seeking FDI

Natural resource seeking FDI refers to resource driven foreign investments; resources concern the availability of raw materials, infrastructure and local partners. Market-seeking FDI means that advantages may be gained through access to local markets in foreign destination, availability of local suppliers and economic policy applied in foreign country. Efficiency-seeking FDI concerns cost-related issues in production; they are related to specialized industry clusters and removal of potential trade barriers. (Ellram et al. 2013b) Strategic-asset seeking FDI is discussed in the previous chapter, as referred to Ferdows' (1997) strategic approach to location decisions. Strategic assets are related to knowledge and synergies to be gained through maintaining the presence in foreign market; tacit knowledge, understanding of market and customer behavior as examples of strategic assets (Ellram et al. 2013b).

This theory provides an insight into FDI decisions (Ellram et al. 2013b). Since the eclectic theory was presented in its final form, several studies have been based on this theory. The eclectic paradigm is divided into three sub-paradigms concerning the different approaches, and it is based on statements that the determinants of international production - extent, form and pattern - are defined by the configuration of three kinds of advantages that the company might have (Dunning 1981, 1988). These advantages must be overwhelming enough to neutralize the extra costs caused by setting-up and operating a value-adding operation (Dunning 1988).

The first sub-paradigm, 'O' component of the model, asserts that the extent of ownership-specific competitive advantages, especially compared to other companies domiciled in the forget destination, positively correlate to probability to be able to establish or extend foreign production (Dunning 2000). The locational aspect of the model asserts that the more immobile endowments, to be used jointly with a company's own competitive advantages, favor a presence in a foreign location rather than in a company's home country, the more likely the company exploits their ownership-specific advantages (Dunning 2000). The 'internalization' component of the OLI model is partly based on former *internalization theory* that focuses on imperfections in intermediate product markets (Rugman 1981, Buckley & Casson 1976).

In past decades the trend in developed countries has been to send jobs to low-cost countries (Ellram et al. 2013a). According to Ellram et al. (2013a) competition in resource markets causes a manufacturing relocation from low-cost countries to either new low-cost countries or closer to customer. As for the OLI-framework being an underlying theory, Kinkel & Maloca (2009) state especially location and internalization advantages to be main arguments for decisions to offshore production to low-wage countries.

2.2.2 Strategic approach to location decisions

Ferdows (1997) gives an important contribution to discussion of production location from a strategic perspective. He distinguishes between the firms that establish their foreign plants only to benefit from limited range of factors, such as tariffs, lower labor and logistics costs, and the ones that consider their foreign plants as a competitive advantage for the entire company. The latter ones are not only looking for gaining those obvious location benefits but also benefits due to vicinity of suppliers and customers, access to skilled workers and other strategic factors. When considering the foreign plant as a strategic source of competitive advantage it is more likely to achieve overall benefits than the plant established only for limited strategic scope. (Ferdows 1997)

Some implications can be recognized of phenomena that companies with limited view of foreign factory potential do not take into account. In the past decades, tariffs and other trade barriers have played a role when considering foreign plant locations. However, most of those barriers have declined and therefore problems occur with plants that have been established mainly for those reasons. The increased emphasis on product development and world-class suppliers distracts the attention from low wages and draws it to the total costs. Therefore, producing in developed countries may carry lower total costs despite of the higher wages. When considering the plant in developing countries, it is important to evaluate factors such as infrastructure and skilled labor and suppliers instead of mere wages. The trend towards shorter timespan between product development and production makes companies to concentrate on locating these activities near to each other. (Ferdows 1997)

Ferdows (1997) has created a framework for defining a foreign plant's strategic role. It is divided into six different roles that a plant can be categorized into, according to the answers on questions "What is the primary strategic reason for the factory's location?" and "What is the scope of its current activities?" The roles are defined as follows:

- *Offshore factory*, established primarily to benefit from low cost
- *Source factory*, primarily established to gain access to low-cost production but having also resources to develop and produce a part or a product for the company's global markets
- *Server factory*, a production unit that supplies certain regional markets
- *Contributor factory*, serves both a local market and assumes responsibility for product customization and development, and process enhancement
- *Outpost factory*, established to reach specific skills that the company needs
- *Lead factory*, has the ability and knowledge to create new processes, products and technologies.

The path of the roles towards the lead factory is presented in Figure 3.

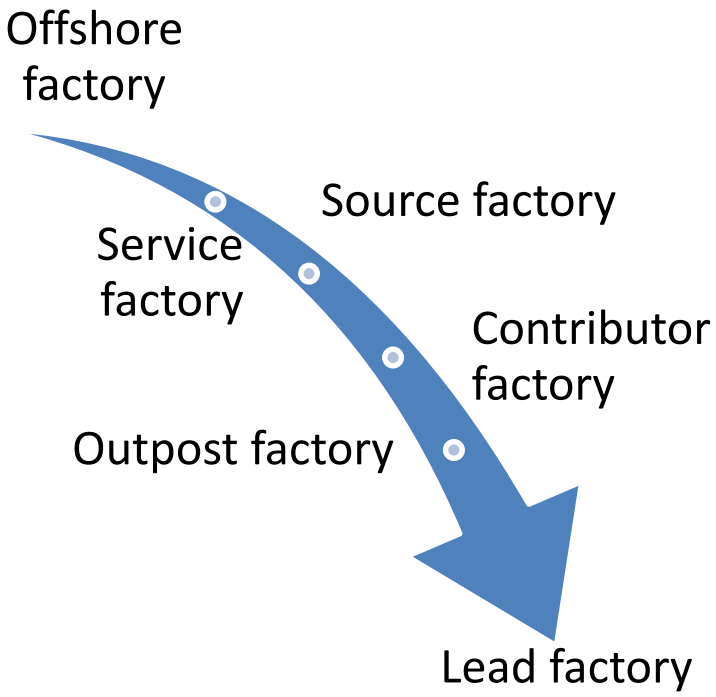


***Figure 3**. The six roles of foreign plants.*

Upgrading the strategic role of foreign factory is possible, but has substantial challenges: company needs to invest enormously resources to a foreign factory and the process might take years. However, the rewards are worth it, if the factory finally provides a significant strategic advantage. (Ferdows 1997)

2.2.3 Factors driving the location decision

The data as the basis of location decisions of manufacturing industry enterprises can be labelled into quantitative and qualitative data. Quantitative data refers to certain numerical values such as transport costs, exchange rates, taxes and labor rates and

qualitative data include factors such as worker skills, government regulations, infrastructure, and access to suppliers (Bhatnagar & Sohal 2005), flexibility and ability to supply, quality, spatial and cultural vicinity to customers, markets and innovation clusters and the risk of know-how loss (Kinkel & Maloca 2009). Even if quantitative factors are easier to measure, it seems obvious that both types of data are required to analyze and evaluate carefully in order to make a successful location decision. According to Kinkel & Maloca (2009) companies tend to make production location decisions on simple and static cost comparisons and underestimate the dynamics and uncertainties of these strategic decisions. That contributes to the Bhatnagar & Sohal's (2005) argument; that companies should emphasize the qualitative factors that are required to support business strategy and only after establishing a set of desirable location options based on these factors make the final decision as cost-based.

The most cited factors in academic literature impacting the production location choices are different costs related to location. Other factors that may affect are e.g. transportation time to major market, availability of needed proficiency, proximity of supplies, political stability of the region, quality of infrastructure and locational and governmental incentives (Caskey 2014). In addition, Ellram et al. (2013b) suggests other factors like country risks (natural, political, environmental, social, etc.), strategic assets (market potential, customer presence), supply chain related risks (terrorism, distance to customer) and logistics (transportation reliability, availability of transportation). As cost related factors are more countable and considered as quantitative data, most of the mentioned factors are qualitative and thus related to supporting a company's business strategy.

Cost savings have traditionally played an important role in the location choices. However, according to Ellram et al. (2013b) companies are increasingly moving from the cost point of view towards location consideration through total cost, profitability and customer value creation. The earlier theory provided by Ferdows (1997) supports that argument, pointing out that cost point of view has started to decrease while weight of factors related to strategic competitiveness has increased. He also states that due to increased global competition the gap is widening between the companies which emphasize the strategic factors and the companies who do not consider strategic factors as important to competitiveness.

Pennings & Sleuwaegen (2000) suggest that under uncertain conditions it is possible for a company to gain benefit by delaying the relocation, were the uncertainty occurring either in the home or in the foreign country. This is explained by that postponement of relocation making it possible that the company can either benefit from favorable changes in the home country or further postpone relocation in case that the changes are unfavorable. They also state that the presence of uncertainty affects mostly uni-national companies and therefore has no correlation to multinational companies' tendency to

relocate. As a result of the survey made by Pennings & Sleuwaegen (2000), the value of waiting with the exit part of relocation is highlighted instead of the entry part abroad.

2.2.4 Decision making process

Evaluating the probability of relocation of activities in a certain company, Pennings & Sleuwaegen (2000) mention firm size, access to global network and the rate of innovation as factors increasing the probability of relocation, whereas uncertainty decreases the probability. Firm size as a factor increasing the probability of relocation is supported by case study results by Kinkel & Maloca (2009). Large companies have both more plants to relocate and a higher potential profitability of a relocation business, especially in cases when variable costs are low (Pennings & Sleuwaegen 2000).

The decision making process for choice of a manufacturing location contains several phases irrespective of the methods and data that is used to form a decision proposal. Figure 4 (Spee & Douw 2003) illustrates a logical path to consider options and make the decision.

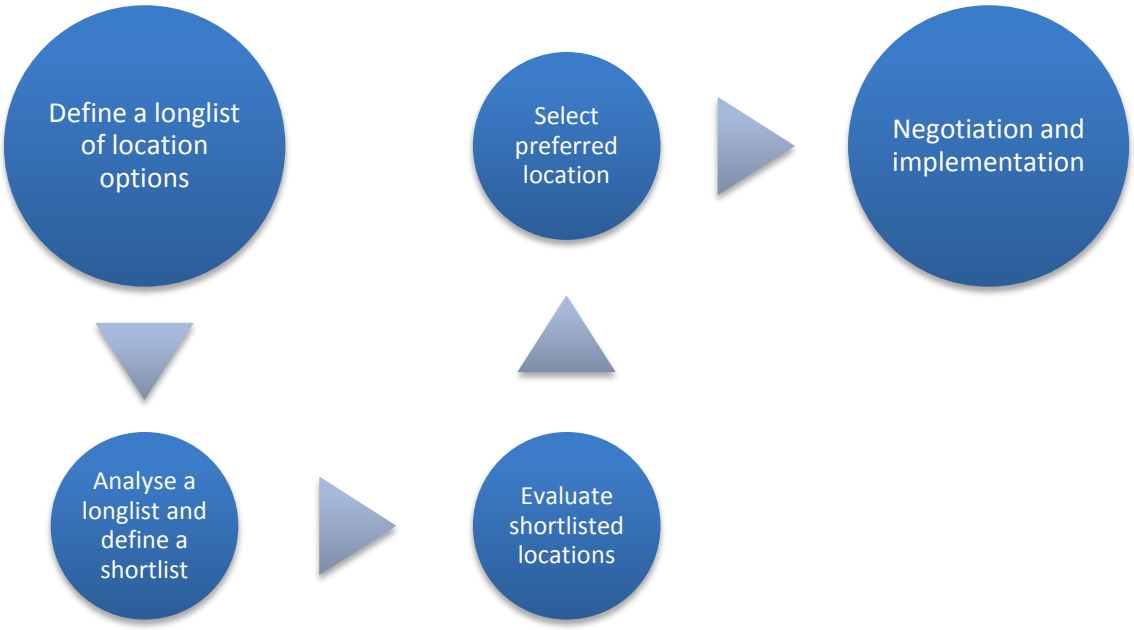


Figure 4. *Approach to location selection (Spee & Douw 2003).*

Reducing the options from a long list to the shortlisted version can be done quickly by taking into account the key drivers for location choices and screening the options using in-house databases and statistics and exploiting previous experience of similar decision making situations. A shortlist is then formed by selecting the most promising options and eliminating the options that do not meet well the company's strategic objectives. (Spee & Douw 2003)

The next step is to evaluate shortlisted location options in order to choose the most optimal location. In this phase, Spee & Douw (2003) emphasize the importance of assessing near-future trends and risks by interviewing and observing the similar operations around, instead of "looking back in time". The factors that Spee & Douw (2003) mention as most important when evaluating location options for final decision are related to people; such as availability, quality, flexibility and cost of staff. After selecting the preferred location the negotiation of contracts and the implementation of the decision take place. Concerning particularly global outsourcing, Gylling et al. (2015) highlight the factors that should be carefully considered when evaluating the decisions: balance in demand-supply relation, cost uncertainties, requirements of technology transfer and the allocation of products to own and contractor plants in changing conditions.

2.3 Offshoring of manufacturing

Offshoring of production can be considered through former theories concerning company's strategy. Two different approaches are considered. First, let us address the transaction cost economies (TCE). Transaction cost economics is a theory in the field of strategy: the main idea of TCE is that it is profitable to reorganize production within the firms, if the transaction costs in operating with external firms are higher than in firm internally (Coase 1937). According to transaction cost economics, transaction and coordination costs increase amid uncertain economic conditions, high prevalence of interaction and high potential for opportunistic behavior at foreign location (Williamson 1985).

Another theory of company's strategy to be considered is resource-based view (RBV). Resource-based view is about a company's existing resources as a source of competitive advantage: the competitive advantage can be gained through exploiting efficiently the resources the company already has (Wernerfelt 1984). The resources that can be exploited as sources of competitive advantage should be valuable, rare, inimitable and exploitable in the organization (Barney 1997). In table 3 concept of offshoring is considered through three different theories related to company economics to understand the outline of the nature of offshoring.

Table 3. *Offshoring in respect of three different theories (adapted from Mugurusi & de Boer 2014).*

Theoretical lens	**Transaction cost economics (Williamson 1975)**	**Resource-based view (Wernerfelt, 1984; Barney 1991)**	**The OLI-framework (Dunning 1980,1988)**
Focus of theory	Transaction substances are the basis for governance (Tate et al. 2009)	A firm is a collection of resources through which the competitive advantage can be achieved (Barney 1991)	Three variables are considered making a decision of international expansion: ownership advantages, location advantages and internalization advantages (Dunning 1988)
Why theory is important for an offshoring organization?	The offshoring firm must maintain control of transactions which can cause difficulties (Mudambi & Venzin 2010)	The decision to offshore is influenced by the ability to invest in a capability and an effort to sustain a superior performance in the capability relative to competitors (McIvor 2009)	For some companies, offshoring is only about maximizing geographical location advantages, in context of resource differences dependent on location (Dunning 1998).

The table describes well the complex nature of offshoring and the emerging variables depending on the theoretical lens. The transaction costs are a significant variable when company offshores its production, especially if the decision has been made for mainly cost reasons. Problems occur when transaction costs are unexpectedly high related to the cost calculations as a basis of decision. The organization must also maintain the capabilities through which the competitive advantage is achieved in order to retain its competitiveness in foreign location. As discussed before, the ownership, location and internalization advantages are important factors when considering the FDI, and the Dunning's theorem is therefore a robust groundwork for decision-making.

Offshoring decisions have traditionally, in the 1970s and 1980s, mostly affected low-skilled workers, but later in an era of improved communication systems almost any job can be offshored to low labor cost countries (Levy 2005). According to results of a survey made by Jensen et al. (2009), even if chiefly jobs performed by low-skilled workers were offshored, there were also administrative functions and jobs where special process skills were needed. However, most management functions were rather rarely offshored.

Offshoring decisions have an impact to different actors and levels of activities: firm level, industrial level and national level. Companies can gain cost benefits by offshoring

their production to low-cost countries, but as Farrell (2005) notes, total transformation of business processes is needed to exploit all the potential that new location can offer to the company. Levy (2005) argues that the trend of international outsourcing indicates a structural change in the global political economy, raising concerns for both the competitiveness of nations and employment of large number of people. In this respect, offshoring literature raises many concerns such as widespread unemployment and even the danger of "hollowing out" of competitiveness of firms and nations (Jensen et al. 2009). Figure 5 shows the chart of fields to which the offshoring decision affects.

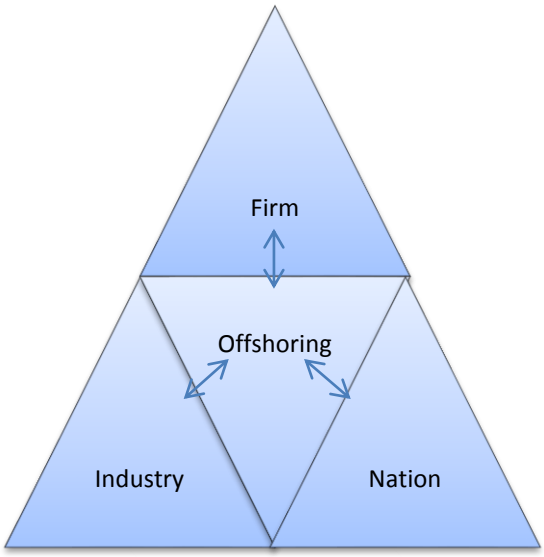


Figure 5. *Offshoring effects on different actors.*

According to Levy (2005), service offshoring is not purely a consequence of cost advantages gained by relocation, but related to the companies' increased capabilities to coordinate globally scattered networks of productive activities. Moreover, he suggests that offshoring as a phenomenon, when concerning it at that point of view, is a strategy that shifts the market power among companies, workforce and nations.

2.3.1 Effects of firm characteristics to probability of relocation

Considering the production from purely locational point of view, Pennings & Sleuwaegen (2000) state that, companies using capital-intensive technologies in their production gain competitive advantages in high labor cost countries whereas companies and industries with labor-intensive technologies are at a comparative disadvantage in high labor cost countries. Hence, the options for such companies are to either close down a plant or move activities to more cost-efficient locations, ergo low-wage countries. The importance of these activities is emphasized when a company faces intense competitive pressure due to imports. (Pennings & Sleuwaegen 2000)

Global network has a positive impact on the relocation decision. When a company is a part of a global network, activities can be shifted within its network without incurring sunk cost when situation turns out to be unfavorable in current location. A company without a multinational network needs to incur the sunk cost, and is consequently not as inclined to relocate its activities as multinational companies. Companies with multinational networks have a higher tendency to shift profitable units to other countries. (Pennings & Sleuwaegen 2000)

The volume and the complexity of the production correlates to production location; high-volume products with less complexity are more likely produced in low-wage countries, whereas low-volume, high-complexity items tend to be produced in developed countries even if the wages are high (Caskey 2014). Also firm size tends to positively correlate with probability to relocate activities (Pennings & Sleuwaegen 2000; Kinkel & Maloca 2009).

2.3.2 Drivers for offshoring

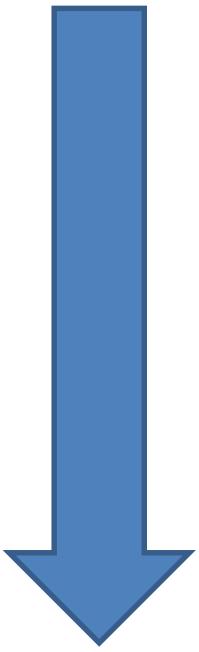
According to Olsen (2006), drivers for offshoring company's activities are essentially based on production costs, distribution and productivity. Lewin & Peeters (2006) list as strategic drivers for offshoring production factors such competitive pressure, improving service levels, accessing proficient personnel and business process redesign. In addition, Kinkel & Maloca (2009) figured out motives such as capacity bottlenecks at the current production location, opening up new markets abroad, key customers vicinity and, though having decreasing importance when discussing the offshoring decisions, also taxes and subsidies. Giving an emphasis for qualitative factors in base of offshoring decisions, Kinkel & Maloca (2009) state that instead of making a decision clearly based on comparison of labor costs, firms should in their decision making processes pay attention to additional risks that might harm strategic competitive factors such as flexibility and quality and secure them.

Bailey & De Propris (2014) argue that multi-national firms make the location choices with respect to the contribution that certain location can offer to company's overall *division of value*. It means that places with lower labor costs are more attractive for labor-intensive activities whereas high value-added functions are preferably located in high-competence place despite of higher cost level (Bailey & De Propris 2014). When considering offshoring, production activities based on routine and manual working are more likely options for relocation than more knowledge-intensive tasks, e.g. research & development (R&D), since routine tasks are quite simple to transmit and absorb in foreign plant (Slepniov et al. 2014).

Ferdows (1997) lists a wide variety of reasons for companies to move their manufacturing processes abroad. These factors are related to cost reductions, risks,

tariffs and business networks. Tariffs and other barriers are though not anymore taking place (Gray et al. 2011) Figure 6 illustrates the reasons for transferring manufacturing in respect of tangibility.

Most tangible



- Reduce direct and indirect costs
- Reduce capital costs
- Reduce taxes
- Reduce logistics costs
- Overcome tariff barriers
- Provide better customer service
- Spread foreign exchange risks
- Build alternative supply sources
- Preempt potential competitors
- Learn from local suppliers
- Learn from foreign customers
- Learn from competitors
- Learn from foreign research centers
- Attract talent globally

Most intangible

Figure 6. *Reasons for moving manufacturing into foreign locations (Ferdows 1997).*

When choosing the location for manufacturing plants, many companies, due to widened sophistication of R&D and importance of having world-class suppliers, give an emphasis at these, more strategic factors instead of only low wages. (Ferdows 1997)

In addition to these factors shown in Figure 6 categorized by tangibility, Lewin & Peeters (2006) has created another list of strategic drivers for offshoring decision: competitive pressure, improving service levels, accessing qualified personnel, "changing rules of the game", industry practice, business process redesign, access to the new markets and enhancing system redundancy to be significant strategic drivers affecting the offshoring decision. The strategic drivers are presented in Figure 7.

Figure 7. *Strategic drivers affecting to offshoring decision.*

Even if cost savings are an important strategic driver considering offshoring, the decision may impact to company's business also through strategic changes. Companies may discover soon after making an offshore decision that a wide range of talented people are willing and capable to get employed as high-quality workers. Therefore companies find out that offshoring is not primarily about saving money but about doing business in a clearly new ways; such activities infeasible in high-cost country are not necessarily infeasible in offshore location. (Lewin & Peeters 2006)

Another implication of offshoring being necessarily not only about potential cost savings is the value of market potential of developing countries. According to Kinkel (2014), the advantages of cost-based relocation activities to low labor cost countries seem to decline, while expansion investments due to market conditions in emerging economies are becoming more important.

2.3.3 Risks related to offshoring

As discussed earlier, operating in foreign locations obviously entails risks. In the existing literature concerning the location decisions and offshoring, different risks and threats can be distinguished. A variety of risks related to offshoring (Lewin & Peeters 2006) are presented in Figure 8.

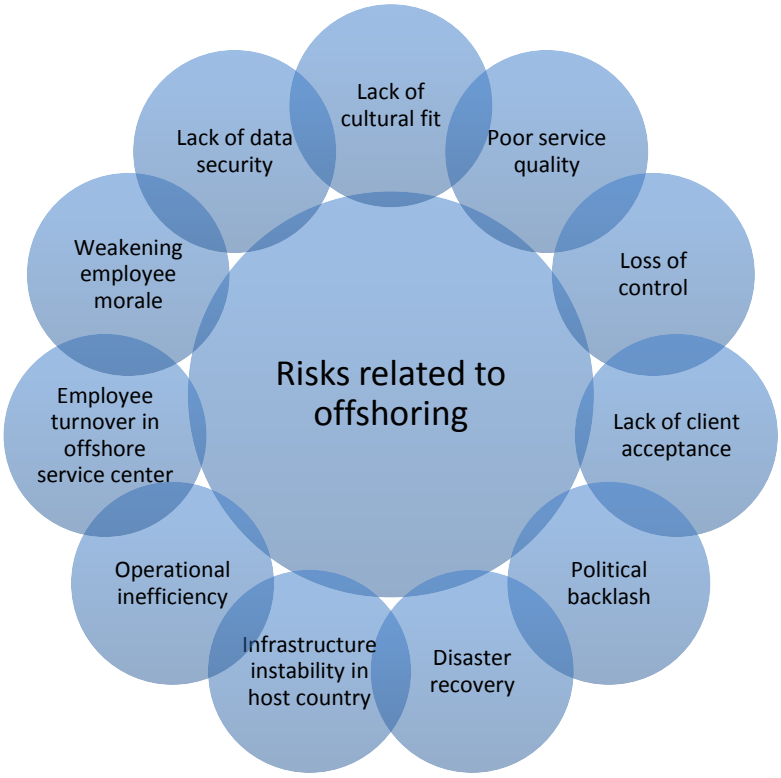


Figure 8. *Risks related to offshoring.*

Risks and threats that are related to offshoring perceived by companies that have offshored or considering offshoring, based on Lewin & Peeters' (2006) survey, are e.g. employee turnover at offshore location, poor service quality, lack of cultural fit, loss of control, operational inefficiency, intellectual property loss and political and infrastructure instability in host country.

As an offshoring decision has been made, problems often occur related to cost calculations. According to Kinkel & Maloca (2009) firms tend to underestimate set-up times and coordination costs for foreign plants, because they transfer their tested project planning calculations straight to foreign location, where cultural and geographical distances may create different cost environment. Offshoring process thus has a wide scale of variables and uncertainties that should be taken into account in process planning as well as locational characteristics.

2.4 Reshoring of manufacturing

Question of the concept and nature of reshoring is complex and a consensus is not achieved in research literature. While several scholars discuss reshoring as in-house back-shoring, in other words repatriation of its production activities, e.g. Gray et al. (2013) asserts reshoring to be fundamentally a location decision instead of a decision of both location and ownership. Ellram et al. (2013) support the argument that reshoring is purely location decision and states that companies make the decision predominantly

based on total costs. On the other hand, Kinkel (2014) distinguishes the main exit modes into back-shoring activities from company's own production plant (captive back-shoring) and from foreign suppliers (outsource back-shoring).

Two options can be identified as possible situations when to relocate a value chain activity that is located abroad. Firstly, it comes into question when benefits reached through offshoring do not meet the expectations. That case is often caused by managerial mistakes. Secondly, decision to relocate activities can be a consequence of deteriorated advantages over time or changed conditions. (Fratocchi et al. 2014) Hence, offshoring decision is done either by wrong basis or by right basis but then became unprofitable. Kinkel & Maloca (2009) argue that back-shoring can be seen mainly as short-term corrections of prior failures in offshoring instead of long-term adaptation to changing conditions at the foreign environment. According to Kinkel's (2014) survey, there is a weak evidence that outsource back-shoring might be more often done to correct short-term mistakes and prior misjudgments related to the quality and logistics potential of foreign suppliers. Alternatively, the potential motives that are in the background of the decision to offshore can be cost advantages gained through tariffs, taxes, duties etc. that are later cancelled.

2.4.1 Drivers for reshoring the production

The motives and drivers for a company's decision to reshore its production operations back to its home country can relate to either pushing factors of earlier low-wage country or pulling factors of home country. The former factors refer to any unfavorable effect that derives from foreign location, whereas the latter factors are inducements that make domestic production an attractive option. Examples of these factors are divided into categories and presented in Figure 9.

Fratocchi et al (2014) distinguish between recent back-shoring activities resulted by governmental incentives – partially resulted by global crisis – and overall phenomenon occurring also in countries where there are not such incentives. As a conclusion, they suggest back-shoring having a complex dynamics involving factors related location, industry and firm.

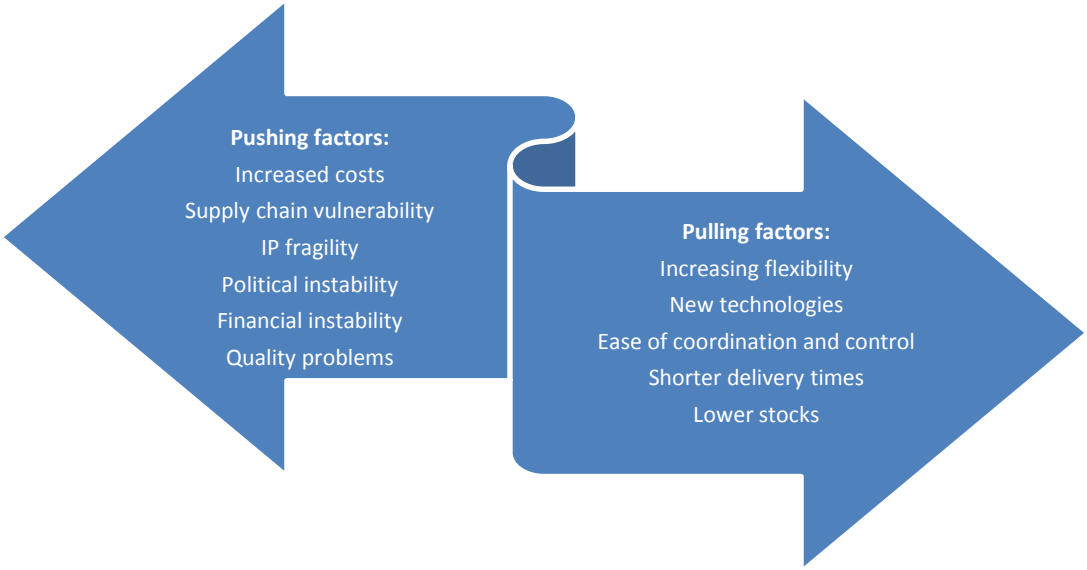


Figure 9. *Pushing and pulling factors affecting to reshoring decisions.*

A wide variety of factors concerning reshoring decisions have been discussed in recent research literature. The most cited drivers are rising costs, such as increasing labor, energy and transportation costs in developing countries, quality issues, flexibility such as supply chain resilience, access to skills and knowledge and currency exchange rates (Kinkel 2012, 2014; Kinkel & Maloca 2009; Gray et al. 2013, Bailey & De Propris, 2014; Arlbjørn & Mikkelsen 2014; Tate 2014; Tate et al. 2014; Fratocchi et al. 2014; Gylling et al. 2015; Stentoft et al. 2015). Costs occur also related to warehousing and services (Ellram et al. 2013a). In addition, risks and threats related to fragile intellectual property, supply chains and other unsecure issues are considered as driving factors (Gray et al. 2013; Kinkel 2014; Tate 2014; Tate et al. 2014).

Other factors that emerge when considering the drivers for reshoring are mainly related to ethical aspects; Ellram et al. (2013a) state e.g. environmental and human right violations to be possible reasons to move manufacturing plant back. This kind of reasons can be remarkable, not only because of a company's values and ethical principles but in aspect of a company's reputation. Financial instability in manufacturing location and automation or potential automation may also affect the decision to reshore production (Ellram et al. 2013a).

Costs

Kinkel (2014) describe the global supply chain as vulnerable system where damages in one of the links can endanger the reliability of the whole chain. Therefore he discusses new strategic imperative of local manufacturing in important markets, focusing on regional concentration and specialization of engineering and manufacturing competences. Complete solution would be then installed to all relevant markets (Kinkel 2014).

Cost structure in end-to-end supply chain consists of raw material and component costs, manufacturing costs, transport and logistics, costs of carrying inventory and tax and duties (European Parliamentary Research Service 2014). Considering the entire supply chain in the situation where production locates in offshore destination, there are many potential points of cost failure en route. Failures to meet the cost savings that companies were expected to gain by offshoring their production is given an important motive for reshoring (Stentoft 2015). This is closely related to increased labor, transportation, service and warehousing costs (Ellram et al. 2013a).

Labor costs have increased in emerging countries (e.g. in China) as a result of increased factor market rivalry and competing for same resources, and an increased demand of semi-skilled, adaptable workforce in its local manufacturing base (Tate et al. 2014). The importance of labor costs and availability have increased particularly in the course of the global economic crisis (Kinkel 2014). Yet regarding China transportation and warehousing costs increase when companies move toward regions with lower labor costs in inland China, voiding some of labor cost benefits (Tate el al. 2014).

Costs occur also related to quality, like quality control, quality securing measures expenses and quality coordination cost for the foreign locations in order to guarantee the sufficient quality level (Kinkel & Maloca 2009). Moreover, they point out that importance of high (operations) coordination costs has decreased probably due to more realistic estimations of those costs taking place beforehand.

Time and flexibility

The long lead-time is a usual concern among major industrial companies. Longer lead-time reduces flexibility, which results in higher stocks to manage uncertainty (Sarder & Nakka 2014). The lead-time is defined as *the time frame between the order placement and receipt of the shipment* (Meredith & Shafer 2003), and thus the location of manufacturing and its geographical distance to customers has an impact on the total lead-time. As transportation time affects significantly to the total lead-time, the companies with longer manufacturing lead-time consider reshoring of manufacturing in order to increase customer satisfaction as a result of just in time delivery (Sarder & Nakka 2014). Placing manufacturing activities close to the market thus minimizes both

the inventory of goods and delivery times, and yet reduces the length of ordering cycles (Shih 2014).

Kinkel (2014) describes the global supply chain as a vulnerable system where damages in one of the links can endanger the reliability of the whole chain. Therefore he discusses new strategic imperative of local manufacturing in important markets, focusing on regional concentration and specialization of engineering and manufacturing competences. Complete solution would be then installed to all relevant markets (Kinkel 2014).

Access to skills and knowledge

Due to increased use of automation and replacement of manual work by hi-tech machinery in production plants located in emerging countries, the need for skilled workforce has increased concomitantly. Changed requirements of employees have led to a situation that there is a shortage of skilled labor in many such countries. Hiring unqualified people then leads to quality problems. (Tate et al. 2014)

Risks

Kinkel & Maloca (2009) consider decreased quality as one of the most significant risks of foreign suppliers. Labile external conditions in foreign location can lead to risen risk level: financial instability in foreign country (Ellram et al. 2013a) as well as political, social and currency instability (Gray et al. 2011). Other environmental risk factors are e.g. natural disaster risk (Sarder & Nakka 2014). Risk factors may arise also related to assets and intellectual property, deficient worker experience and infrastructure. In addition, cultural and language issues and communications incongruity in foreign location are potential risk factors. (Gray et al. 2011)

Changing conditions and cost uncertainty are also risk factors. Tate et al. (2014) state that importance of labor cost stability has increased among companies when considering manufacturing location. As increased costs generally, instable cost environment causing unexpected costs is therefore an important driver to reconsidering the location.

2.4.2 Challenges in production reshoring

Backshoring activities can be a rational strategy to adapt to dynamically changing environment in global markets (Kinkel 2014). However, despite of a compelling macroeconomic data on labor and factor costs, the actual process of reshoring is not an easy task: this can be seen most obviously in a situation when company's resources such as domestic supplier base, workforce and product design skills have withered (Shih 2014).

According to the survey among manufacturing companies in the UK, constructed by Bailey & De Propris (2014), the most common challenges that companies meet in production reshoring are lack of skilled labor, higher wages, energy and raw material costs, access to finance and regulations that might not have been affecting in a previous location.

Arlbjørn & Mikkelsen (2014) have identified several barriers regarding production insourcing. Those barriers consist of lack of allocation of resources such as workforce and economy, premature process of insourcing, lack of a proper base for the insourcing decision, insufficient proficiency of production staff and problems related to information and communication.

Considering the potential barriers in the managerial point of view, according to Shih (2014) the challenges that managers meet when reshoring the manufacturing were stabilizing workforce, reconsidering the capital/labor ratio, organizational skills gaps, forming a local supply base product design adjustments respectively to proximity to manufacturing.

2.5 Effects on business ecosystems

Moore (1993) has defined a business ecosystem as follows: *"Business ecosystem is an economic group which involves various stakeholders which are co-related to each other."*

Manufacturing's role is changing; even if manufacturing is growing globally, the manufacturing sector's relative size in an economy varies with its stage of development. In industrializing economies the manufacturing sector grows rapidly, but once manufacturing's share of GDP reaches its apex it starts to decrease along with its share of employment. That is because of the rising wages, when more money can be spent on services, leading to the service sector's accelerating growth. As a result, the service sector becomes more important than manufacturing sector as a source of economic growth. (McKinsey 2012) Therefore, when production is moved to developed countries from where it was originally shifted to less developed countries, there must be changes in the business conditions in order to make it worth doing. In this chapter those drivers and changes are discussed.

Many offshoring decisions are based on only an interest in low labor costs, which means that there might be deficiencies in the other areas that can cause problems. Activities are reshored not for a single, simple reason, but there are many variables that need to advocate the decision. That is why the activities do not go away again in a situation in which one element of the business or the economy changes. (Fishman 2012) But the actual process of reshoring is still not an easy task, especially if the activities

have been offshored for a long time. According to Pisano & Shih (2009), managers tend to consider moving production away as a rather simple decision that can be just cancelled if problems such as low quality level, unexpected costs or supply chain complexities emerge, neglecting the consideration of lasting damages that derives from the outsourcing decision to not only the company's capabilities but also the other companies serving that industry.

Reshoring initiatives will hardly be in important role in restoring industrial competitiveness in high wage countries. Restoring the process competence that has been outsourced years ago is probably a hard, if not impossible task. Instead, as Kinkel (2014) suggests, it would be in many cases easier to build up capabilities for the next generation technology than to try to train again the earlier outsourced competences. A company's competitive position will probably also weaken during the learning process. (Kinkel 2014) Therefore, it is justifiable to assume that the production will not return in the similar mode than it was once when it was shifted into foreign location. Whereas some companies seem to continue internationalizing their activities, other companies increase their focus on exploiting the strengths and potentials of their home countries in high labor cost regions. The offshore decisions also seem to be based on more critical factors than in the past. (Kinkel 2014)

As discussed before, when company has offshored its production, the nature of business management somehow changes and the challenges such as the need of coordination and culture-specific difficulties occur. The business ecosystem including suppliers, customers, logistics, competitors etc. changes and companies need to adapt to changed environment. Again, when manufacturing is transferred back, the decision impacts not only for technologies and company's internal strategic issues but the whole business ecosystem.

Table 4 aims to clarify the new challenges that company meets after the decision to reshore. The basis of the consideration is constructed by Moore (1993) and the updated version enables mirroring the reshoring challenges for traditional evolutionary stages of a business ecosystem.

Table 4. *Reshoring challenges in the evolutionary stages of business ecosystems (adapted from Moore 1993).*

	Cooperative challenges	***Reshoring challenges***	**Competitive challenges**
Birth	Work with customers and suppliers to define the new value proposition around a seen innovation	*Revive the former relations with domestic stakeholders.* *Define the new capabilities and form a strategy to benefit of them efficiently.*	Protect your ideas from others who might be working toward defining similar offers. Tie up critical lead customers, key suppliers, and important channels
Expansion	Bring the new offer to a large market by working with suppliers and partners to scale up supply and to achieve maximum market coverage	*Build up new technology capabilities faster than competitors who already have strong existing capabilities.*	Defeat alternative implementations of similar ideas. Ensure that your approach is the market standard in its class through dominating key market segments
Leadership	Provide a compelling vision for the future that encourages suppliers and customers to work together to continue improving the complete offer	*Adapt quickly to re-structured business environment and coordination effort in the ecosystem.*	Maintain strong bargaining power in relation to other players in the ecosystem, including key customers and valued suppliers
Self-Renewal	Work with innovators to bring new ideas to the existing ecosystem	*Redefine the company's strategy to make most of new technologies and innovations.*	Maintain high barriers to entry to prevent innovators from building alternative ecosystems. Maintain high customer switching costs in order to buy time to incorporate new ideas into your own products and services

The main idea of reshoring companies, in order to retain and strengthen the competitiveness in the domestic market, is to adapt quickly to inevitable changes.

Technology and innovations have a significant role in renewal of manufacturing companies after the decision to reshore production, and they have an impact to whole business strategy. New technological capabilities are a key issue in intense competitive situation in developed countries.

3. METHODOLOGY AND MATERIALS

In this chapter the nature of the study is described; the underlying philosophy, approach and research design including the methods used in data collection and analysis procedure. In Figure 10 is presented the 'research onion', illustrating the choices that are used in this thesis: the research philosophy, research approach, research strategy, research choices and the time horizon. In this chapter the choices will be undergone in more detail.

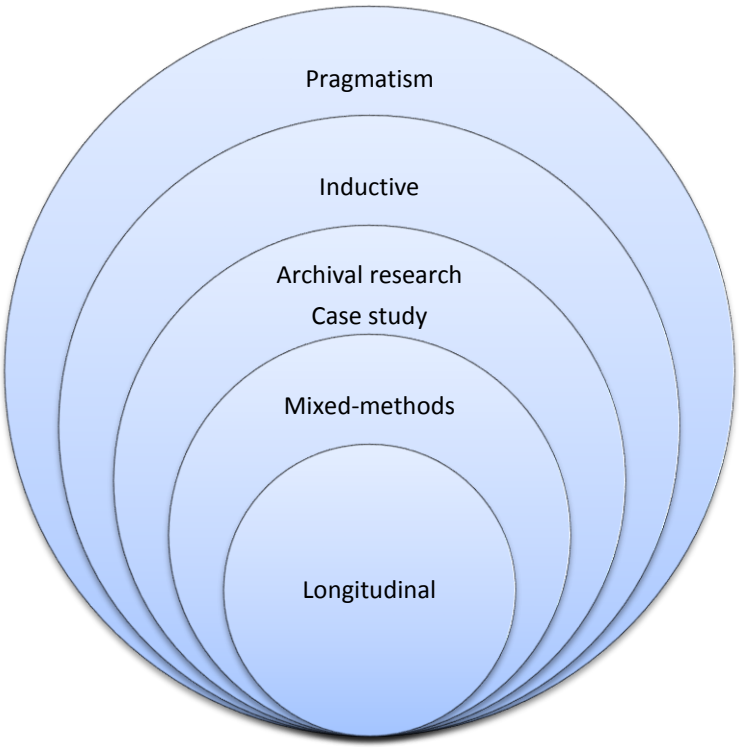


Figure 10. *Research philosophy, approach, strategy, choice and time horizon.*

As Figure 10 shows, the underlying philosophy is pragmatism and the approach is inductive. Archival research and case study are the strategies that have been applied in this study. Time perspective is longitudinal and mixed-methods choice is applied in conducting the analysis.

3.1 Research philosophy and approach

The research philosophy is a blanket term related to the development and the nature of the knowledge. The research philosophy contains certain important assumptions about the way to observe the world; the research philosophy that is adopted reflects to the choice of research strategy and methods (Saunders et al. 2012). The research philosophy includes the perceptions of ontology, epistemology and axiology. Ontology concerns with the nature of the reality, epistemology is about what constitutes acceptable

knowledge in a field of study and axiology studies judgements about value (Saunders et al. 2012). The research philosophy is partly influenced by practical issues considering the research, but also by the stance for the relationship between knowledge and the learning process through which the knowledge is developed. (Saunders et al. 2012). That is why understanding of research philosophy is important.

Saunders et al. (2012) presents four different research philosophies: *positivism, realism, interpretivism* and *pragmatism*. The differences between these philosophies are focused on the perceptions of ontology, epistemology and axiology. Positivism refers to stance that credible data can be created only through observable phenomena and in a value-free way. The essence of realism is that objects exist independently of the human mind and the truth is that the senses show as a reality. Therefore it is an opposite of idealism according to which only the contents of the human mind exist. Interpretivism emphasizes the necessity for researchers to understand the difference between humans as social factors as well as between conducting the research among the people and objects. (Saunders et al. 2012)

In this study, pragmatism is adopted as a research philosophy. The basic idea of pragmatism is that research questions are the most important determinants of ontology, epistemology and axiology, and pragmatism thus accepts the view that more than one philosophy can be used in same research depending on which best enables answering each research question (Saunders et al. 2012). It is not necessary to adopt positivism, interpretivism or realism as it stands in this research, instead this study may consist of characters of more than one of those philosophies. The reason why pragmatism as a research philosophy is the best choice in this study is that it is hard if not impossible to define a strict plan for analysis beforehand, because it will be compounded during the process depending on the emerging information upon the research.

Regarding the research approaches, Saunders et al. (2012) categorize them into *deductive* and *inductive*. Deductive refers to approach in which the existing theory or created hypotheses are tested, and it is generally applied in quantitative researches. On the contrary, inductive approach is about building the theory upon the analysis of collected materials. Inductive approach is more likely to be applied in research with qualitative data and a variety of methods to collect the data is often used. (Saunders et al. 2012)

An approach that is applied in this study is predominantly inductive. Deductive approach is excluded because there is not a theory or hypotheses in the background to be tested in this study. The research method is mainly qualitative, even if there are some elements of quantitative research and the study is not considered to be purely mono method but mixed methods. Ketokivi & Choi (2014) distinguish between empirical quantitative and analytical quantitative research; empirical quantitative data refers to large-sample research relying on statistical reasoning, whereas analytical quantitative

refers to mathematical and stochastic modeling. In this study the characteristics of qualitative research are empirical. Nevertheless, the quantitative perspective of analyzing the data is not as significant as qualitative because it is not properly statistically cognizable and thus could not be considered as scientific evidence as it stands. That ascribes the imperfections of dataset. Instead of a strict statistical analysis the quantitative data is used to description of the extent generally. Therefore, inductive approach is the natural choice of these two options. However, in this study, *theory elaboration* is done in order to increase understanding about the phenomena. Elaboration, in this context, refers to relating the results of the study to prior knowledge (Merriënboer & Kirschner 2007). The purpose is to exploit the existing models and related theories in order to categorize data and through the process to create new knowledge.

3.2 Research strategy and choice

The research strategy in this study is archival research; the data is collected solely by using the news published in chosen media sources. The archival research makes use of documents and administrative records (Saunders et al. 2012). The archival research strategy is applicable and meets the objectives of the study starting from research questions for two reasons. Firstly, the longitudinal perspective is needed in order to recognize the potential trends in companies' investing behavior. The archive research as a research strategy allows answering the research questions focusing upon the past and examining the changes over time (Saunders et al. 2012) and enables accessing the necessary data from a long period despite the time constraints and limited resources. Secondly, when the objective of the research is to create a general perception of the phenomenon, manufacturing investments in Finland during the last ten years, news archival offers a wide spectrum of information about the 100 companies and the dataset is sufficient for creating an overview of investments in the manufacturing industry.

The data used in this study is called secondary data. Using secondary data refers to reanalyzing the data that has been collected originally for some other purpose. The types of secondary data can be divided into three categories: documentary secondary data (books, journals, articles etc.), survey-based secondary data (censuses, regular surveys, ad hoc surveys) and multiple source secondary data (two or more datasets have been combined to form a new dataset prior to your accessing the data). The main type of secondary data used in this research is documentary secondary data as the news archive is the main source of data.

When considering the research choice, the first issue is to define whether it is mono method or multiple methods. Mono method is that only one data collection technique and corresponding analysis procedure is applied, whereas multiple methods refer to the choice that more than one of them is applied. (Saunders et al. 2012) In business and management research, this is increasingly advocated (Saunders et al. 2012; further

Curran & Blackburn 2001). Multiple methods can be divided into multi-method choice, when multiple techniques and procedures are used but only qualitative or quantitative view is applied, and mixed-methods, when both qualitative and quantitative views are applied. Mixed-methods can be further divided into mixed-method research and mixed-model research depending on analysis procedures in respect of data collection techniques. (Saunders et al. 2012) Figure 11 illustrates the alternative research choices and the way it is chosen in this research.

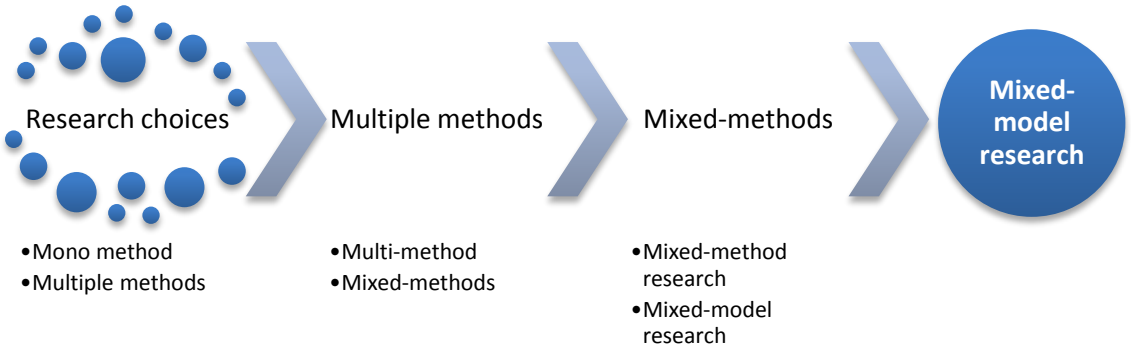


Figure 11. *The research choice.*

Mixed-model research is applied as a research choice in this study. It means that quantitative and qualitative data collection techniques and analysis procedures are combined; the numerical data can be converted into narrative and qualitative data can be converted into numerical mode (Saunders et al. 2012). Although, as stated above, the focus is on qualitative point of view, there is also useful information occurred about the amounts of investments and they are countable and thus in numerical mode. Data analysis procedures include qualitative method (categorizing the data), and quantitative method (graphs and description of the extent). There is only one source of data, and the analysis is conducted in a way to make the most of it.

3.3 Research method

The materials used in this study are based on Talouselämä 500 list of companies published in 2015. The list consists of 500 largest companies in Finland based on their annual revenues and is made once a year. The sampling is defined by shortlisting the original list for 100 largest companies operating in manufacturing industry. The timespan is defined as 01.01.2005-30.06.2015. The reason beyond choosing timespan in this extent is the possibility to discern the effects of the global economic crisis, started in 2008, for manufacturing investments in Finland.

3.3.1 Collection of data

The data included in this study is collected by using online database Talentum. Talentum is a company whose core business areas include publishing media and literature for professionals of various fields and organizing up-to-date training and other events (Talentum 2015). The online database respectively consists of news and articles in magazines and newspapers published by Talentum.

When using the Talentum online archive, first step is to enter search words and wanted timespan and list of magazines, if necessary. Search words can be a phrase or words separated with different punctuation marks. AND-condition is marked with "+", OR-condition is marked with ",", NOT-condition is marked with "-" and cutting the word is marked with "*". Phrases can be formed by using these marks and grouping the words with quantities. Figure 12 is a snapshot of the searching page when the settings have been fed.

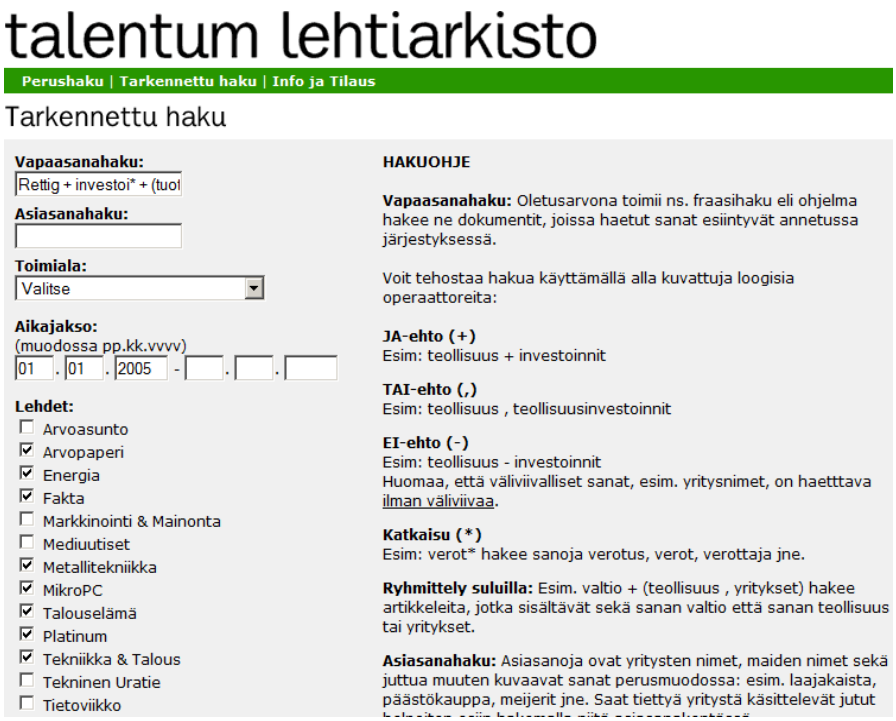


***Figure 12**. Search page and chosen settings.*

There are 13 magazines to choose, and it is possible to choose any of them when doing a search. Magazines in the database are Arvoasunto, Arvopaperi, Energia, Fakta, Markkinointi & Mainonta, Mediuutiset, Metallitekniikka, MikroPC, Talouselämä, Platinum, Tekniikka & Talous, Tekninen Uratie and Tietoviikko. Five of them were eliminated because of irrelevance and the rest eight are chosen for the target dataset in this study. Data is then finally collected from the news published in Arvopaperi,

Energia, Fakta, Metallitekniikka, MikroPC, Talouselämä, Platinum and Tekniikka & Talous. Search phrases are formed using the next combination:

`investoi* + (tuotanto* , teollis*)` [1] `+ name of a company`

The algorithm described above is repeated with each of the 100 companies. Search results, i.e. the news, are read and the relevant news concerning the manufacturing investments in Finland are recognized and collected to Excel tables. Each company has an own page where there are columns such as "Publishing date", "Content" and "Reasons/Attentions" filled insofar mentioned in each news.

3.3.2 Data analysis

The next step, after collecting the data, is to create a conclusive Excel table, where the quantitative data is presented. Each company has a row where there are a number of investment activities made in timespan of 2005-2015. Second phase after finding out the exact numerical data of the whole number of investments is to separate and label the investments according to year they are made in. As a result, it is thus created a timespan of investments, by reason that it is possible to see how economic crisis affects the companies' propensity to invest in Finland.

Simultaneously with creating a timespan of investments, the investments that were separated and labelled in previous phase are identified and concluded to a new excel table. The purpose of this is to remove the effect of news overlapping, as many of the investments are informed in several news and in a couple of news there is information about multiple separate investments. Therefore the sum of the news in an original conclusive excel table does necessarily not equal the sum of separated investments found out in news.

3.3.3 Categorization of data

When making an excel table of each separated investments, the types of investments were also identified and labelled into three categories: new investments, replacement investments and development investments. New factories and buildings related to new business areas were considered as new investments. As replacement investments were considered the cases where new types of automation or production solutions replaced the older ones. Plant widening, enhancements and improvements in existing production processes were considered as development investments.

After making the categorization in respect of investment types, the next step was to try to recognize and identify the reasons and drivers to the investment decisions. This part

[1] invest* + (production , industr*)

is based on Dunning's eclectic paradigm presented in Chapter 2. As can be seen, there are four possible advantages that can be gained by foreign direct investments. As the theory is in quite a general mode, it can be used to describe different market cases. In this study, the theory is applied for domestic investments.

4. RESULTS AND ANALYSIS

In this chapter the results of the study are presented and summarized in respect of existing theory. As the result of archive research, a wide scale of investments was distinguished. The analysis upon the data in rather quantitative mode is presented in Chapter 4.1. The distribution of investments is considered according to the frequency and types of investments, concerning the whole set of target companies.

In Chapter 4.2, a more strict analysis is conducted from four companies operating in different industries, the particular emphasis given for reasons for investments, possible effects of industry characteristics and the potential of the investments for industry renewal. Changing economic conditions and especially the global economic crisis is also taken into account in the whole analysis. Some elements of Dunning's eclectic paradigm, the potential advantages to be gained by FDI, are applied as underlying theoretical lens when conducting the analysis. These potential advantages can be generalized to concern any investment in respect of considering locational issues and is therefore applicable in creating general knowledge of the drivers also in the domestic investments.

Chapter 4.3 evaluates the implications of the results, and the summary of the research results is created. The general outcomes of case companies are presented. The limitations of the research are also discussed and the reliability of the results is discussed.

4.1 Distribution of investments

In this subchapter statistics related to investments in Finland during the period 2005-2015 are presented. Issues to be considered are distribution of numbers of investments by companies, numbers of investments according to the year they are made, and categorization of investments according to the type they represent, the types being defined as new investments, replacement investments and development investments. The year of investments are defined as years they have started, if the project takes more than one year. It also means that all the investment projects are necessarily not finished yet. The consideration of the year 2015 limits to the end of June, when the data collection took place. That is why the year 2015 is not included in Chapter's 4.1.2 chart.

4.1.1 Distribution of investments among companies

The number of investments made by 100 largest manufacturing companies in Finland during the years 2005-2015 was found to be 168. 52 companies out of 100 have made one or more investments. The rest, 48 companies, have not made any investments. The

biggest number of investments was 16, whereas the smallest number was 1. Figure 13 illustrates the distribution of numbers of investments among the 100 companies.

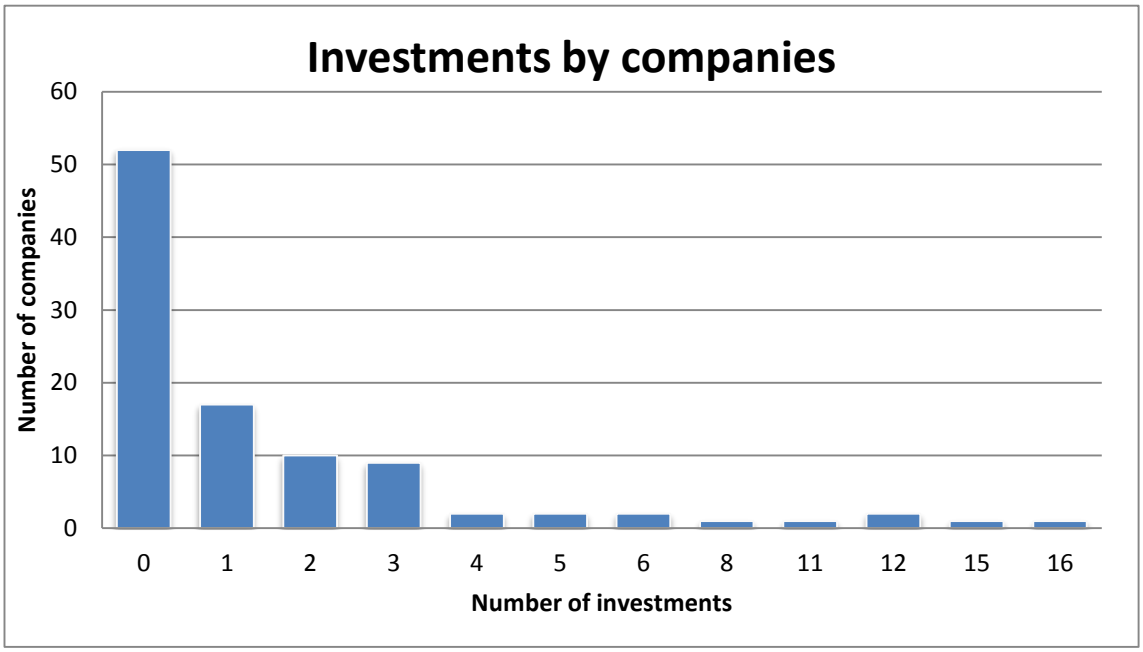


Figure 13. *Distribution of investments among the companies.*

As the chart shows, more than half of the companies have not made any investments during the defined time period. Only 10 per cent of the companies have made 5 or more investments. There seems not to be a conspicuous correlation between the company's size (measured by a revenue) and number of investments, except the largest companies: the number of investments being more than 10 are all made by companies counting among the 20 largest.

4.1.2 Distribution of investments according to year

The next issue to be considered is the distribution of investments based on time. Figure 14 visualizes the development of propensity to make investments.

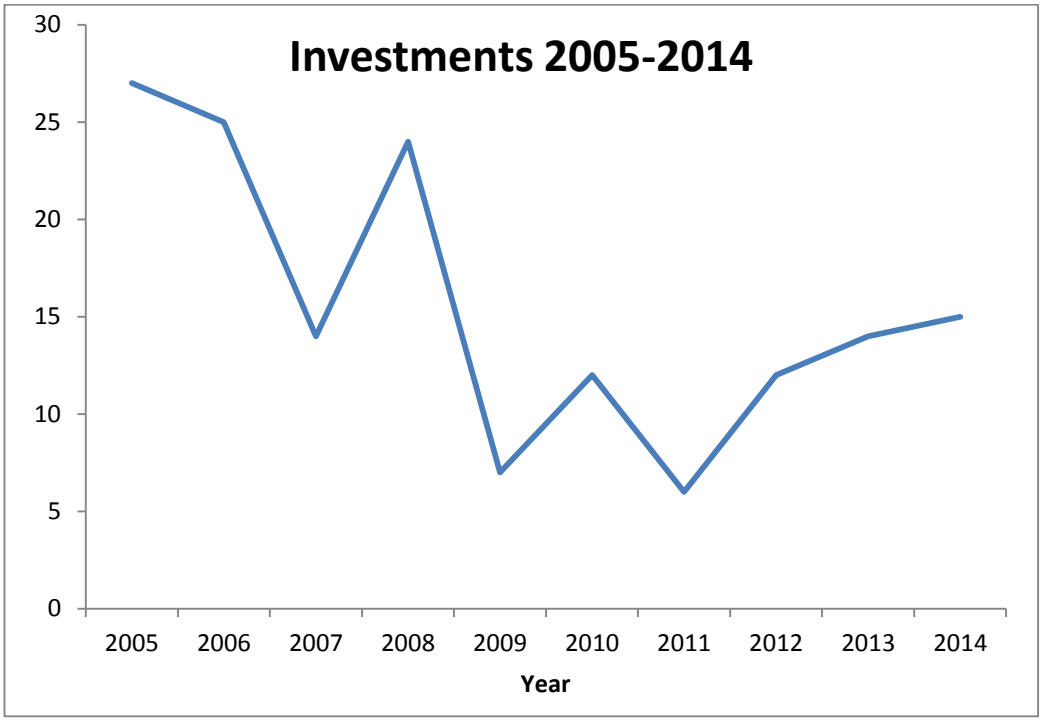


Figure 14. *Investments in Finland 2005-2014.*

As can be seen, the highest peak in investments is dated to year 2008 after which the crash is observable. The pattern can be assumed to be a straight reflection to the global economic collapse started in the end of the year 2008. Because the scale is made by year, the high peak is therefore in 2008, during which the crash actually started. A smaller decrease in the number of investments happened earlier, in year 2007. The crisis being deep and prolonged is depicted in the chart, as the number of investments has not got up to the level in which it was before the crisis and in the beginning of the chosen timespan, in the year 2005.

However, after 2011, in which the number of investments is the smallest, there is a slight increase in next years. The year 2015 is excluded from the graph because only half of the year was considered in the data collection.

4.1.3 Distribution of investments by investment types

The types of investments are also identified and labelled into three categories: new investments, replacement investments and development investments. New factories and buildings related to new business areas were considered as new investments. As

replacement investments were considered the cases where new types of automation or production solutions replaced the older ones. Plant widening, enhancements and improvements in existing production processes were considered as development investments. Table 5 summarizes the results of categorization.

Table 5. *Types of investments.*

Type of investment	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
New investment	6	3	1	6	3	1	2	3	2	3	2	32
Replacement investment		1		3	1	1		1				7
Development investment	20	21	12	15	3	10	4	8	12	12	10	127
Not defined	1		1									2
Total	27	25	14	24	7	12	6	12	14	15	12	**168**

Some of the investment news requires interpretation as they were not self-evident. For example, the border between new investments and development investments is not clear in all cases. If the plant is widened, it is defined as development investment but a new building in the same plant area is still considered as new investment, despite of the fact they might have been made for the same purpose.

The data collected from news is not in a regular form but different amounts of information are included in different news. As the delimitation of the study is only to use a database of news archive and additional information is not used by external sources, some of the investments cannot have been categorized and thus they are left out to an own group.

Three quarters of the investments made in the considered timespan in Finland are development investments. Number of development investments is 127 which equals 76 per cent of the total amount of investments. New investments are the second largest group with 32 investments, which equals 19 per cent of the total amount. 7 investments and thus 4 per cent of the total amount are considered as replacement investments. Two of all the investments are not defined to be counted in any category because of incomplete information.

4.2 Reasons for investments

As discussed in the theory part of this study, the reasons for reshoring can be distinguished into pushing and pulling factors. Materials, the news archive, do not in

most cases include the information about if the production is reshored to Finland or not, in other words, if the production is ever earlier offshored or not. So the pushing factors are outside of discussion, but the pulling factors in sense of positive issues in producing in Finland are looked at. Theoretical background concerning reshoring can be thus applied also in the case where only Finnish investments are considered despite the lack of previous offshoring decisions.

Dunning's eclectic paradigm concerning potential advantages to be gained through FDI is applied in this study for categorizing the investment decisions made in Finland. Figure 15 presents the potential advantages gained through investments.

Figure 15. *Potential advantages to be gained through investments.*

As presented above and discussed in chapter 2.1, the four types of advantages are natural resource seeking, market seeking, efficiency seeking and strategic asset seeking. Insofar possible, each investment is identified to be counted in one or more of these groups.

Next section includes cases of four companies which have made several investments in Finland during the period of 2005-2015. The case companies were chosen in the way that every one of them is operating in a different industry in order to make it possible to see the differences in the investment behavior between the branches, as well as in the effects of the economic crisis. The goal is to make an analysis of each of the four companies regarding the investments; recognize the drivers and the strategic objectives in the background if possible, classify the investments through the theoretical lens of OLI paradigm and take a look at the possible effects in investments followed by the economic crisis. The case companies are UPM, Valio, Neste Oil and Ruukki.

4.2.1 Case UPM

UPM is a Finnish pulp, paper and timber manufacturer, operating in the fields of forestry, energy and biotechnology industries. Six out of ten UPM's large plants are located in Finland. According to our data collection, UPM has made 16 investments in Finland during the period 2005-2015, which is the biggest amount in comparison to the entire list of target group of companies. The investments made by UPM were almost solely development investments. Only 1 investment of 16 was not categorized to them. Most of the investments have been made before the year 2008, when the economic crisis took place. The change has been rather dramatic. Figure 16 illustrates the distribution of investments according to the years.

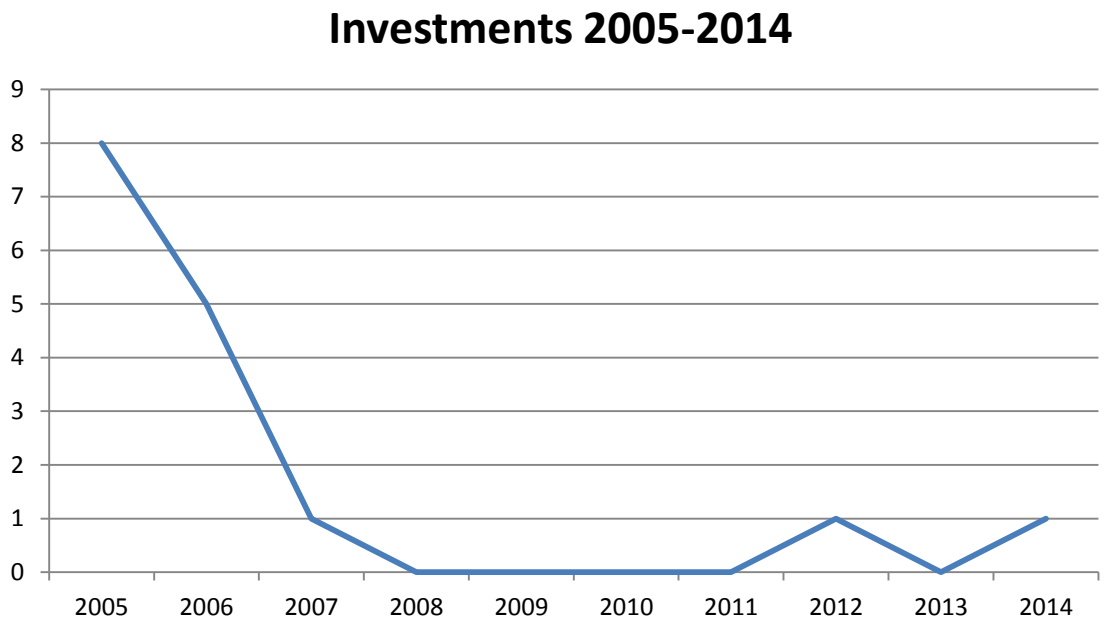


Figure 16. *Distribution of investments made by UPM (2005-2014).*

Three of the investments were made for modernizing the production places, the budget being 14 million euros (2005). One of investments was made to build a biological wastewater treatment plant located next to the paper factory, with a budget of 8.5 million euros (2005). Two investments were made to raise the volume of production: in one case the volume of the production was aimed to double, in another case the aim was to increase the volume and performance of production with a budget of 60 million euros (2005). One investment was made for change of production raw materials; 18 million euros was invested in order to increase the use of recycled fiber in production (2005).

Investments were made also to enhancements of maintenance and development of power plant in one factory with the budget of 40 million euros (2006). Quality enhancements for production by renewing the production process required a budget of 38 million euros (2005-2008). 160 million euros was invested in an expansion of a pulp

factory (2014) and 25 million euros in a new production line (2006-2007). Another production line was renewed and modified in order to change a product to produce. 16 million euros was invested in general modification for different purposes, such as automation, increased speed of production and environmental protection (2007). Bio power plant was the only new investment made by the company and was worth 150 million euros (2012-2014). Heat and chemicals recovery plant which was built next to the existing pulp factory was, in terms of money, the biggest investment by 360 million euros (2006-2008). The idea of the plant is to salvage the chemicals used in pulp production and return them to be reused while the heat energy is utilized.

When considering the nature of investments through the theoretical lens of OLI-model and potential renewal of UPM's business, some implications can be distinguished. As the company operates in the forestry branch, it is self-evidently a reason to consider investments in specifically Finland as *natural resource* seeking. The business divisions are related to processing raw wood into different products and exploit the recyclable materials in production. Increased *efficiency* is in focus of investments in automation, increased speed and performance of production and heat recovery plant, which is to increase output. Investments for plant modernization, enhancements for maintenance and development of power plant are made for supporting the activities.

Market situation, research and development outcomes and changes in demand are the potential drivers for investments for increasing the volume of production, enhancing the level of quality through renewing the production processes and new production lines. These changes give a response to changing needs in market regarding the products, while a plant expansion can be considered to be rather as a long term adaptation for increased demand of capacity. In the background of the decision to make an expansion investment is UPM's belief to increasing demand in developing markets; the investment is made as a part of UPM's objective to raise the capacity of pulp production up to 10% during the next three years.

Building a new bio power plant and a biological wastewater treatment plant, increasing use of recycled materials in production and investing in environmental protection can be seen as a group of activities related to corporate responsibility because these activities target to decreased environmental load. On the other hand, use of recycled materials in production is considered in UPM as a production strategy to increase efficiency, so it is best categorized to efficiency seeking investments in order to retain UPM's competitiveness in this respect.

New bio power plant can be considered as a *strategic asset*, because it is assumed to create value and strengthen the UPM's status in the future, and the investment can be seen as an implication of willingness to renewal. The production of bio power plant equal the quarter of the targeted bio power until the year 2020; therefore the investment contributes Finland to reach the targets and increases Finland's autarchy in energy.

Almost all the production ends up to the Finnish market. Investment is made without any public investment support. The manager of the bio power division has been awarded with an energy award based on the investment. The investment is a result of several years of R&D processes and one driver for development work is, according to the company, directives and commitments set by European Union.

Heat and chemicals recovery plant was built to replace two obsolete heat recovery plants (built in 1964 and 1976) with high expenses by one modern plant. The purpose of this investment is to ensure the vital future of pulp factory for the next decades, which is crucial for the other factories in the factory integrate. When the project started, the old plants were already near to the end of their working life and were deconstructed. As a result of the project, costs of production and the environmental load are decreased while the energy and heat autarchy of the factory is increased significantly. The use of the biofuels is also increased and the capacity of bioenergy production is almost doubled.

New production line investment is the first solution in Finland in which electricity replaces hydraulics. In addition to its diverse product portfolio, UPM gains competitive advantage in particular from its investments in supreme new technology. Quality enhancements were executed by renewing the production methods. Investments for increasing volume and performance of production and increased use of recyclable materials in production were UPM's response to price competition which is becoming even more intense in the paper branch.

Sources of information:

Tekniikka & Talous (27.1.2005; 3.2.2005; 7.4.2005; 25.8.2005; 20.4.2006; 27.4.2006; 8.6.2006; 7.9.2006; 2.11.2006; 14.12.2006; 31.5.2007; 15.3.2013; 10.2.2012; 21.9.2012; 22.2.2013; 11.10.2013; 1.11.2013; 16.5.2014; 12.9.2014), Talouselämä (15/2005; 9/2006; 18/2006; 30/2008; 14/2012; 19/2012; 28/2012; 30/2012; 28/2013; 34/2013; 9/2014; 20/2014; 21/2015), Arvopaperi (helmikuu 2013), Energia (4/2009), Metallitekniikka (1/2005)

4.2.2 Case Valio

Valio is a Finnish company which concentrates on processing raw milk into dairy products. It has made 15 investments during the last ten years, three of them being new investments and the rest being development investments. Economic crisis seems not to have a negative correlation to the number of investments; more than half of the investments were made after the year 2008. The distribution of investments is presented in Figure 17.

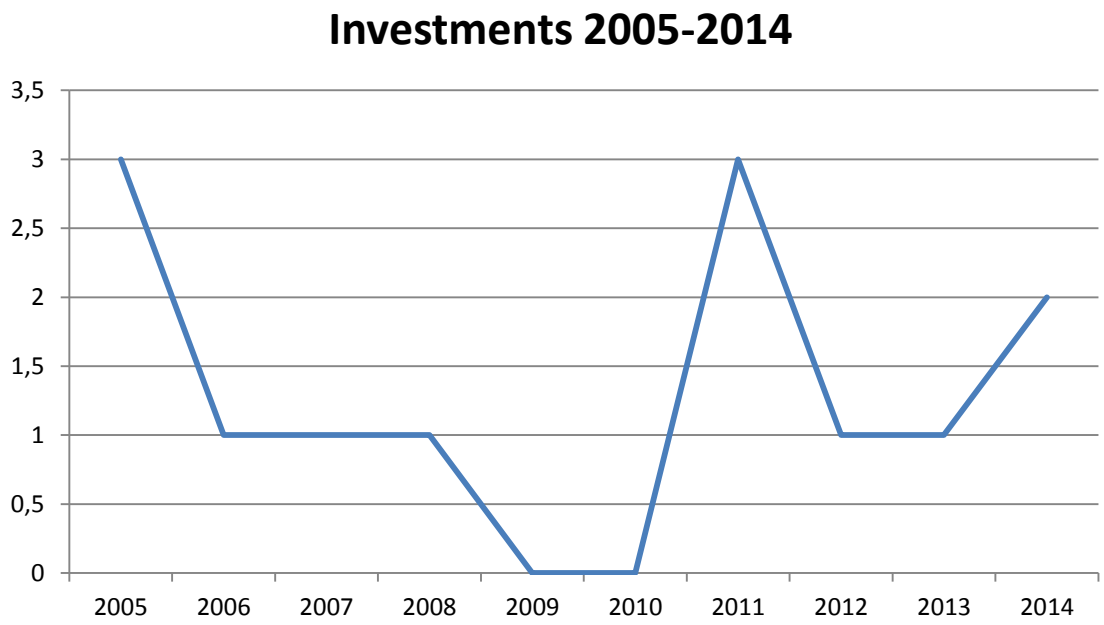


Figure 17. *Distribution of investments made by Valio (2005-2014).*

Four investments were directed to production capacity improvements. Two of these investments were made to expansion of special milk production capacity, budgeted as 30 million euros together (2014-2015). One investment was made for development of cream cheese production, and one of them was made with 40 million euros budget to increase capacity in production of all groups of perishables (2014-2015).

New production lines for dairy production were built to existing factory in three locations, one with the budget of 7.6 million euros (2006) and another with 20 million euros (2013). The third of them was made together with a new power plant in the same location, budget being together 25 million euros (2011-2014). Increased level of automation has a role in these investments.

Two investments were made to automation. One was for picking automation deployment, another for warehouse automation and widening with a budget of 14 million euros (2008). One investment was made to development of production.

New factories were built in two locations, one (2014-2016) with a budget of 75 million euros (total costs 170 million euros) and another with 55 million euros (2011-2014). A massive renovation was done for fat factory, costs being 40 million euros (2007-2010). Production machinery was also renewed. Factory expansion worth 17 million euros was made in one plant (2012).

Capacity improvements, new production lines, factory expansion and new factories are considered as *market* response for increased demand. Investments for automation and development of production as well as a renovation of the fat factory are made to increase *efficiency*. Renewed production machinery and new power plant increase and strengthen company's *strategic asset*.

Investment for a new factory, which is concentrated on highly processed production such as yoghurts and high protein products, was made mainly because of strong export market especially to Russia. Valio believed that the property that the company acquired for building the factory enables significant development and improvements of company's business in the future if the market situation is propitious. The investment was thought to bring a lot of new jobs in the factory and warehouse. The share of production with high profit should increase significantly along the investment. However, political situation and embargo between Europe and Russia led to strong reduction to export business. Valio then ended up getting a large operational loss caused by the embargo, because Russia is not only the predominant export destination but the highest profit was gained there through higher prices. In year 2015, the share of export to other destinations somewhat increased, but the general profitability in export business has still weakened.

Another investment for a new factory is also partially made for strong export market. The factory is concentrated on whey powder, infant formulas and infant food industry. New cheese production line is built with extremely advanced technology which is not available from any suppliers and therefore brings competitive advantage to the company. The investment also increases a production capacity.

Production capacity improvement investments were made for satisfying the increased demand; foodstuff industry is not as responsive for economic fluctuation as many other industries. Another reason for capacity improvements and heightened utilization rates of capacity is the increased competition in dairy product market. Part of the increased capacity especially in highly processed products is directed to export.

Sources of information:

Tekniikka & Talous (26.5.2005; 8.2.2007; 6.6.2008; 18.11.2011; 16.5.2014; 29.8.2014), Talouselämä (42/2006; 23/2011; 40/2011; 15/2012; 21/2013; 28/2013; 14/2014; 19/2014; 20/2014; 2/2015)

4.2.3 Case Neste Oil

Neste Oil's core business is oil products processing. Company produces e.g. fuels for different traffic purposes, liquid gas and fuel oil. Company has made 12 investments during the period 2005-2015, three of them being new investments and the rest being development investments. Distribution of investments according to year is shown in the chart (Figure 18).

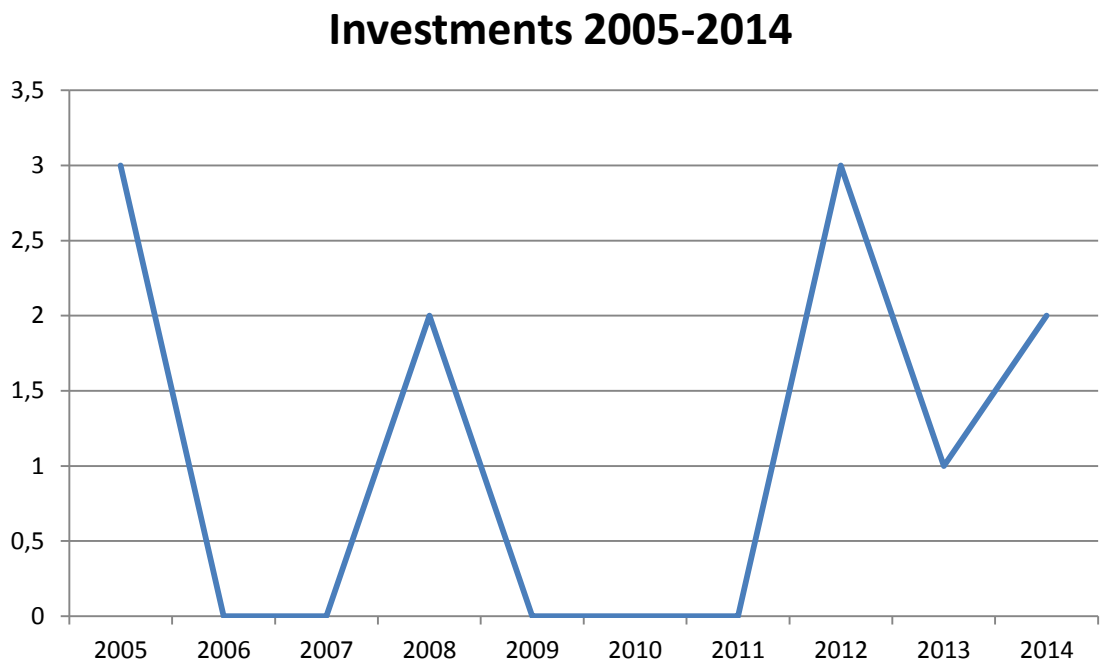


Figure 18. *Number of investments made by Neste Oil (2005-2014)*

The biggest investment was worth 700 million euros, when a new diesel combustion plant was built in years 2005-2007. Other new investments were two bio combustion plants, worth 100 million euros each. They were built in years 2005-2007 and 2008-2009. Two investments were for plant widening in different locations. One of them was a pre-processing unit for raw material input worth 200 million euros (2014-2017); another one was isomering facility for a processing plant (65 million euros), executed in 2013-2015. Investments were made also for plant safety, when Neste oil acquired safety automation systems for two plants.

There were several renewal project investments in different plants. Technology renewal investments worth 142 million euros together were made to one plant (2015), whereas massive cleaning and renewing works worth 60 million euros were executed in another plant (2012). Company has also invested in modernization of wastewater treatment plant. 60 million euros was budgeted in projects focused on process efficiency enhancements in one plant (2014-2015). Structural changes in order to simplify the infrastructure were also made for that plant. 40 million euros was invested to different maintenance development and cost-efficiency enhancement projects (2005). The projects were executed during the stoppage, which is undergone typically every 4-5 years.

The investments are predominantly related to *efficiency* enhancements and *strategic asset* strengthening. Combustion plants are part of Neste Oil's strategic goal and a response for present demand and future demand potential. One of the objectives considering the investments to bio combustion plants is to achieve competitive

advantage by pioneering in the field. Efficiency enhancements are achieved by the investments for technology renewal, changes in the processes and the plant structure and maintenance development.

A technology renewal project required a massive stoppage in Neste Oil's plant. Production was run down for 8 weeks and required 1.3 million working hours. The aim of the project is to ensure production effectiveness for the next five years. In addition to the mentioned costs of 142 million euros, costs occurred also from the stoppage and the investments executed during the next years.

An investment for the pre-processing unit for raw material input will improve the production structure of Neste Oil and enhance the potential of raw material feeding optimization. Projects related to process efficiency enhancements and simplifying the structure of the plant are executed as part of the objectives to optimize the production and achieve growth of the business.

Isomering facility for a processing plant processes high octane components. It is not considered as a strategic investment project for the company but the one that enhances efficiency. Development of the demand and the margins were also unsecure. That is why the project was postponed when the economical crisis took place. However it was executed later in 2013-2015, because according to Neste Oil's vision the demand of purer fuels will increase globally.

Neste Oil has developed a special technology for biofuel processing and is gaining significant competitive advantage through the biofuel business through the new business. The product and the production process are nonpareil by measures of quality and efficiency. The production process of the new biofuel is flexible; it can be processed from almost any vegetal and animal fats. Costs of production are therefore low and the price instead is high, which creates a good profitability. Many car producers prefer the new biofuel rather than the first generation biofuel products, because this new product is better for motors. In addition to this, according to European Union directive the share of biofuels in traffic should reach at least 10% by the year 2020 for environmental reasons and decreasing the dependency of oil in European Union. There is also standards of what kind of biofuels are accepted; some of the first generation biofuels are occurred to be harmful to climate and are therefore not accepted.

The diesel combustion plant is a company's response to diesel shortage in Europe; almost half of the new passenger cars have a diesel motor and fuel processing companies have not followed in time but produced too small amounts of diesel and too much other products as gasoline and bunker fuel. The competitive advantage that Neste Oil gains in production of diesel is the cheaper raw material than their competitors have. The company buys Russian raw oil with a high concentration of sulphur and the sulphur is removed in the process whereas the competitors produce diesel from light raw oil

with low concentration of sulphur, which is more expensive. The prices of products is then higher, because the product portfolio is right and the product is ecological.

Sources of information:

Tekniikka & Talous (22.9.2005; 2.3.2006; 26.10.2006; 14.12.2006; 27.9.2007; 3.10.2008; .10.2011; 11.5.2012; 8.2.2013; 16.8.2013; 31.10.2014; 8.5.2015), Talouselämä (17/2005; 30/2005; 2/2006; 20/2006; 7/2007; 15/2007; 10/2008; 26/2008; 18/2009; 24/2009; 41/2012; 5/2013; 35/2014;), Metallitekniikka (10/2014), Energia (3/2005; 8/2005; 7/2006; 1/2007; 8/2007; 38/2007; 2/2009)

4.2.4 Case Ruukki

Ruukki is focused on manufacturing metal components and systems to the construction industries. It has made 11 investments during the last ten years. In year 2014 Ruukki has fused with Swedish steel company SSAB.

When considering investment types, development investments were clearly the largest group; only one investment was not considered as for development, instead it was a replacement investment. Replacement investments were overwhelmingly the smallest group, when only in 7 cases replacement investments were recognized. The distribution of investments is presented in Figure 19.

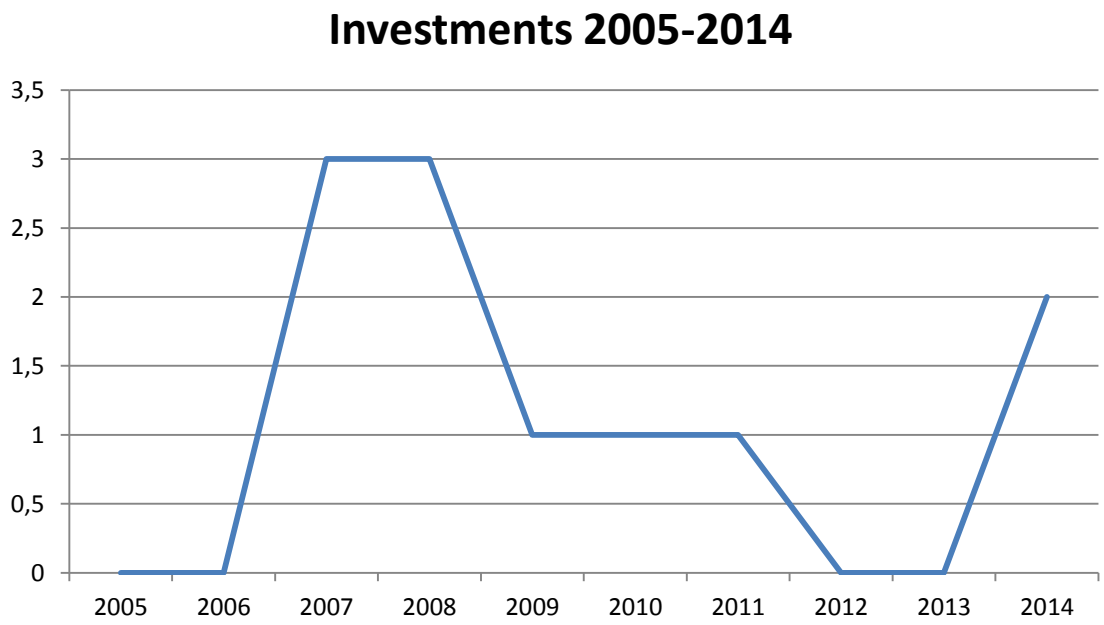


Figure 19. *Distribution of investments made by Ruukki (2005-2014).*

Two investments were made to steel service centers in different locations, while activities in centers were concentrated and divisions of labor were reformed. Investments for machinery were made in years 2010 and 2011, when two blast furnaces

were overhauled, and 2014, when converters in steel foundry were renewed. In year 2014 the replacement investment worth 65 million euros was made for parts of blast furnaces. Oil injection was replaced by carbon injection machinery. The purpose of this replacement was to decrease raw material costs.

An investment worth 20 million euros for new production in an existing plant was made in 2011. This investment is a result of product improvement, which was the company's response for increased claim for energy efficiency. The solution can lead to even 30 % saves in energy consumption.

Investments were made for capacity increase in production and painting in two plants. Ruukki has raised its market share in steel constructed bridges partly due to corporate acquisition, and investment decision to capacity increase in production of heavy trunk constructions has boosted the business. Plant widening and modernizing investments were made for another steel trunk construction factory. Investments were made in year 2007 during the construction boom. Process improvement investments for production were made in order to decrease grit emission into air and solids burden to sea while energy consumption decreases.

Drivers for investments were related to improvements in *efficiency* and *market* conditions. Process improvement investments, replacement investments for parts of blast furnaces and steel service centers can be considered as efficiency seeking investments, whereas new production as a response for claims for energy efficiency of the products, capacity increase and plant widening are related to market. According to existing investment records, Ruukki's objectives are to cut different costs, improve the production and performance and pay attention to environmental issues.

Sources of information:

Tekniikka & Talous (15.2.2007; 22.8.2008; 30.4.2009; 2.6.2011), Talouselämä (6/2007; 13/2007), Energia (3/2009), Metallitekniikka (4/2014)

4.3 Summary

According to the materials and the results of the empirical research, it is justifiable to state that the external conditions, especially the economic depression, generally exaggerates the speed of changes in companies, but the reasons in the background of the investments seem to depend on the field that the company operates in. Giving an example, the restrictions to export business to Russia is currently challenging the companies which have a significant share of the sales to the east. In addition to actual sanctions concerning e.g. food industries, the changes in currency rates and devaluation of ruble set challenges to pricing.

The analysis of case companies was conducted paying the specific attention to factors such as investment activity, company's focus and objectives regarding the investments, market and potential markets and the role of technology. The specific focus was set on recognizing the underlying factors and potential drivers for investments regarding the renewal of industry business areas.

There is a variation between the drivers and objectives of investments made by case companies, but the common factors in all four companies seem to be the new technology innovations and market orientation as sources of competitive advantage. In the first case, UPM, the most critical factors attach to tightening cost competition in the field of paper industry. Natural resources have a big role in UPM's manufacturing operations and the access to raw materials locally is crucial to profitability. That sets strict criteria to the location, and cutting costs are not probable to be executed through decreasing labor costs by transferring production. Therefore investments are made in order to minimize production costs and to increase the cost efficiency by putting an effort to process development. In addition to this, investments in the increased energy autarchy are supporting the idea of cost savings in the long run. Differentiating the product portfolio is another issue considering the company getting along with competition, because cost competition is the most intense particularly in the paper branch.

The food industry is not as sensitive to economic situation as many other industries because of the nature of the branch; the products are essential for daily living. That is probably partly why the frequency of investments made by Valio seems not to be affected by the recession as much as for the other companies in this analysis. More than the economic conditions generally, the political issues are setting major challenges in the company's market and competitiveness that might affect also the company's future. Those issues do not depend on the company's own acts. In certain product markets like cheeses, the competitors from European Union area set competitive pressure concerning pricing and product portfolio. The focus of the company's strategy is now more on brand and high-profit products instead of pure price competition. Strong brand strengthens the pricing power while, on the other hand, general loss of purchasing power may weaken the sales of these products.

Neste Oil concentrates now on renewable raw materials and acts as a pioneer in the branch. The company has made big investments in bio diesel during the last few years. The markets of traditional oil products are rather competed, and the bio diesel is the company's new breakthrough gained by long time technology development work. Political issues also impact to the company's competitiveness; EU directives, current and prospective, set new criteria and standards to fuels, and Neste Oil benefits from the changes. Diesel market is not in balance in Europe, because the supply does not meet the increased demand of diesel and many other companies cannot respond to growth in

demand. Additional competitive advantage of Neste Oil is gained through the product quality, as diesel manufactured by the company is relatively pure.

New technologies and product development have significant roles in Ruukki's business. This reflects to the company's investments. Ruukki concentrates on certain activities and products in which it aims to increase their market share. The field seems not to be especially sensitive to business cycles; construction hardly will ever stop. However, the investment decisions can be postponed because of weak economic situation.

In general, according to the materials as the base of this study, the most critical factors concerning renewal of industries and retaining the manufacturing competitiveness in Finland are investing in new technologies, differentiating the product portfolio and minimizing the production costs. Cutting costs is linked to process development and new technologies, such as automation. Product development and innovations play a major role in industrial renewal. Investment sensitivity and frequency and factors impacting them depend in some extent on the field of industries, but the major changes in economies on an average correlate negatively to the frequency.

5. DISCUSSION

In this chapter, the research is evaluated through the concepts of validity, reliability and limitations. The delimitations and the potential effects on results caused by the choices are also discussed. In this chapter, also suggestions for further research about the topic are presented.

5.1 Validity of the research

To evaluate the validity of this research, we should have a look at the research questions. Validity of research means the research method's ability to measure the purposed things (Hirsjärvi et al. 2007). Therefore, we now consider the research questions and the results of the study and evaluate the success of the research based on them: if the achieved results meet the research problem, and if they offer sufficient answers to the questions.

The research questions were set in the beginning of this study. The following three research questions were formulated to guide the study:

What have been the volume and the trend of investments in manufacturing in Finland according to the published news during the last ten years?

What have been the intended drivers and objectives of these investments, according to the published information?

What can we conclude from the trend of investments, and their drivers and objectives, as a source of renewal for Finnish manufacturing industry in general?

For the first question, the implicit answers can be found in chapter 4.1. The question is about the volume and trend, and statistical analysis insofar possible is conducted to find out the extent and the distribution of investments. The research method is integrated into research question, and the restrictions of the measure are acceptable. As the sampling of 100 biggest manufacturing companies is quite a wide and the analysis period is almost ten years, the results give quite comprehensive perception to the extent and the trends. Briefly, the trend is impacted by strong economic growth and then by economic recession, and has been a bit volatile in the course of the period of examination.

Chapter 4.2 offers an answer to the second research question. The intended drivers and objectives of investments made in Finland are researched through analyzing four case companies; the results are therefore taking into account a narrow sampling of the entire data. Nevertheless, the case companies are chosen from different industries and based on them can be concluded that the drivers to some extent vary upon the industry and

company. The data as the basis of those analyses has a qualitative nature and therefore the question of validity is complicated; according to Hirsjärvi et al. (2007) the term validity is tended to be linked to quantitative research rather than qualitative, whereas Wolcott (1995) states that validity as a concept is not clear. Therefore we may not use the strict concept, but just state that the question is answered.

The third question is rather associated with the second question, and the answers are found out through making the case analyses, because other investments and companies have been analyzed on a more general level. Several important implications are recognized, when considering the industrial renewal through the investments. As discussed in chapter 4.3, the role of technologies and innovations is emphasized as well as renewable energy and raw material sources for creating new competitiveness. According to the categorization of investment types, most of the investments have been made for development; that supports the idea of general technological renewal.

5.2 Reliability and limitations

Reliability of the research refers to repeatability of the research and its ability to give non-contingent results (Hirsjärvi et al. 2007). When evaluating the reliability of results upon which the analysis is conducted, there can be distinguished a few potential issues in the database that can have an impact to the exactness and completeness of results. Challenges in the data collection are mainly related to incomplete information found in news articles. Interpretation has been needed in some cases as, for example, the investment is only mentioned in subordinate clause and there is no additional information.

Under some articles investments are told to be several years' projects, and the whole timespan is not clear, which means that some kind of interpretation is needed when defining the years. Types of investments were defined in cases where it is somehow possible. There might be incompleteness not only in the information about investments but also in the number of investments, as the Talentum database is the only information source. It means that every single investment is necessarily not told in the magazines which the database consists of. Another fact about defining the number of investments is that every investment is not possible to be distinguished into separate event and thus might cause inaccuracy in results.

The limitations of this study are also related to the database that has been used as the only source of information. Any additional data is not used unless it is found in those magazines. Search words are used always in the same form that is defined after studying the use, testing and iterating the best possible match. However, there might still be some news that cannot be found by searching with those words, e.g. using synonyms is a potential block. The research is repeatable using the same form of search phrases, but the slight differences might occur if the phrase is changed in some way. This can be

pointed out as a specific challenge concerning the archival research based on news archives.

The style and form of news in the magazines vary depending on the magazine and the genre of article; some information can be obtained through the articles more like opinion pieces or subordinate clauses referring to the investment events. Therefore the thorough consideration is done under each piece of information concerning the reliability.

The last issue to be considered is the assumption, that speaking about rather qualitative data there might still be researcher-specific interpretation. As discussed in chapter 3.1, the pragmatism was adopted as a research philosophy. Despite the pragmatic way to collect and analyze the data, it is possible that some kind of interpretation would cause differences in conclusions made by different researchers.

5.3 Needs for further research

Further research might be needed to clarify the offshoring and reshoring trends in Finland. Theoretical background of this study consists of the location choices and implicitly offshoring and reshoring phenomena, but in the empirical part the movements of production are not considered. When collecting the data, some cases of moving the manufacturing were recognized, but regarding the scope of the research, they were systematically excluded from consideration.

This study is executed by conducting a longitudinal analysis of the extent of the manufacturing investments in Finland and the four cases are extracted from the entire dataset. Upon the data that is collected for this study, the more comprehensive analysis of the underlying reasons of investing in Finland could be conducted. Another research is needed for clarifying the most common reasons for investing in Finland, as this study is more concentrated on answering the questions “In what extent investments in Finland are made?” and “How do the investments contribute to the renewal of manufacturing industries?” The latter question is researched through a rather small sampling of companies and, therefore, generalization of the results to the whole sector of Finnish manufacturing companies cannot be suggested.

5.4 Delimitations

Delimitation was set geographically to only include investment events executed in Finland. The materials were defined to include the 100 largest manufacturing companies in Finland. The target investment group was investments to production, so investments to e.g. logistics and research and development were excluded in this study. The number of the companies included in this study was rather justifiable, because the trend of the number of investment was mostly decreasing respectively to the company’s size, and

the company-specific descriptive analysis was best able to be conducted with the companies with biggest revenues.

Time constraint is defined to be the last ten years. The chosen scope gave a longitudinal perspective to development of the extent of the investments and was easily executable because the archival research was chosen to the research strategy. As the speed of changes in the business environment and industrial sector seems to still accelerate, the same kind of research performed later would probably generate different outcomes speaking about the trends. But as for general outcomes of this study, it seems obvious that different factors are affecting the industrial competitiveness in Finland now than earlier, and the manufacturing investments in Finland are made as a result of more strategic perspective. The business environment is changing dynamically, and one of the most important success factors is to adapt and respond to the changes.

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